

SELF-EVALUATION REPORT FOR EVALUATION OF RESEARCH ORGANIZATIONS IN THE SEGMENT OF HIGHER EDUCATION INSTITUTIONS IN YEAR 2025



HIGHER EDUCATION INSTITUTION NAME:

BRNO UNIVERSITY OF TECHNOLOGY

COMPANY REGISTRATION NUMBER (CRN): 00216305

THE LIST OF EVALUATION UNITS IN MODULE 3:

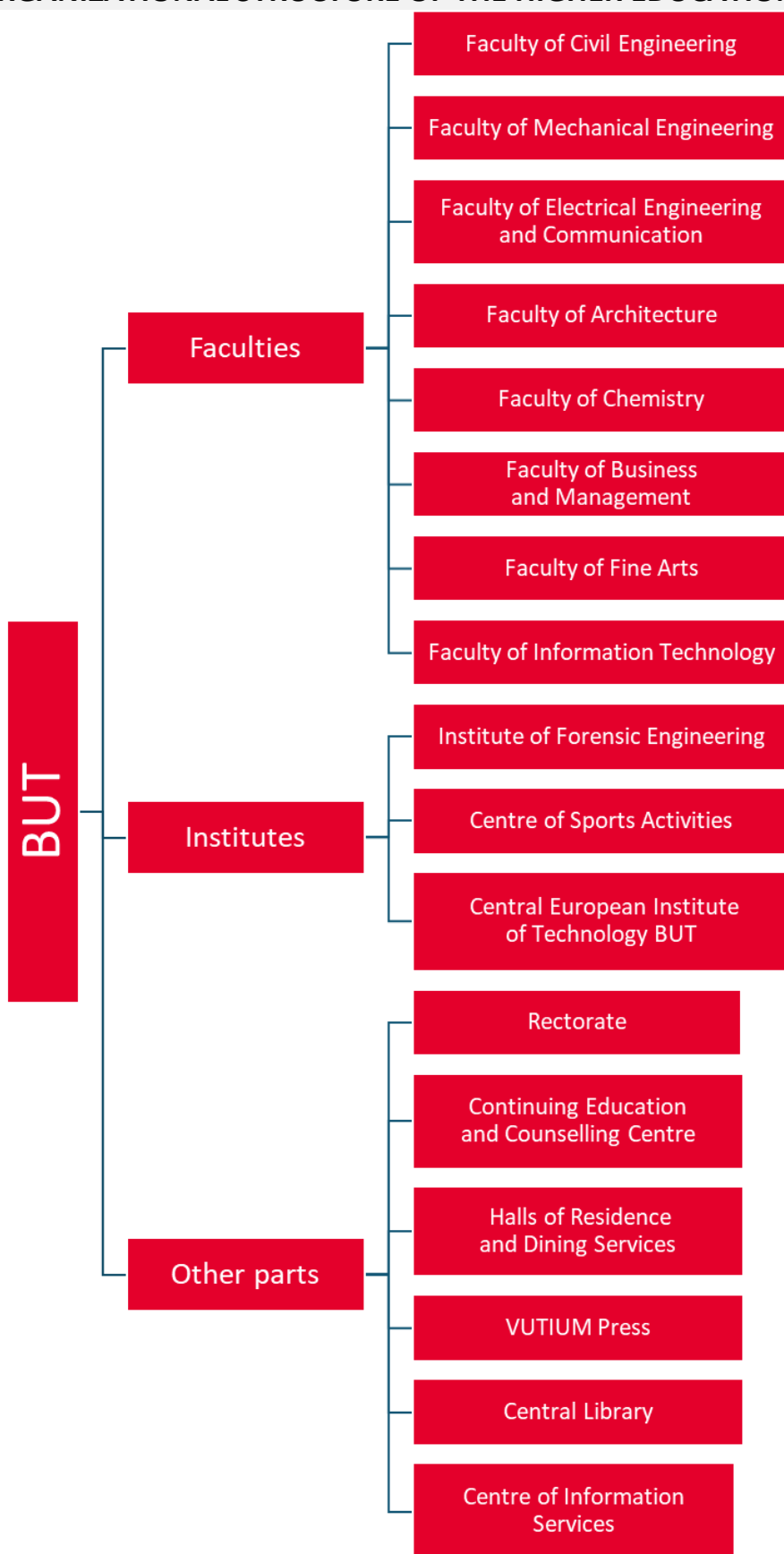
a) Faculties

- Faculty of Architecture (FA)
- Faculty of Business and Management (FBM)
- Faculty of Chemistry (FCH)
- Faculty of Civil Engineering (FCE)
- Faculty of Electrical Engineering and Communication (FEEC)
- Faculty of Fine Arts (FFA)
- Faculty of Information Technology (FIT)
- Faculty of Mechanical Engineering (FME)

b) University Institutes

- Central European Institute of Technology (CEITEC)
- Institute of Forensic Engineering (IFE)

ORGANIZATIONAL STRUCTURE OF THE HIGHER EDUCATION INSTITUTION



HIGHER EDUCATION INSTITUTION WEBSITE (HTML LINK): <https://www.vut.cz/en/>

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Ladislav	doc. Ing. Ladislav
Janíček, Ph.D.,	Janíček, Ph.D., MBA
MBA	Datum: 2025.05.06
	11:38:38 +02'00'

Signature (Rector), stamp
doc. Ing. Ladislav Janíček, Ph.D., MBA, LL.M.

Introductory information about the evaluated higher education institution

The HEI briefly introduces itself. The organizational chart, the position of the HEI within the research, development and innovation system and the system of HEIs in the Czech Republic may be commented on, the mission and vision, the size of the HEI, the number and focus of the units evaluated will be briefly presented.

Maximum 500 words.

Description:

Over more than 125 years of its development, **Brno University of Technology (BUT)** has grown into the **second largest technology university in Czech Republic**. It is also one of the **four largest Czech universities**. BUT is a member of the **Research Universities Association** (<https://www.avuni.eu/en>), which brings together the **country's leading research-intensive universities**. The Association prioritises quality education, scientific excellence, the development of research infrastructure, knowledge exchange, and support for the transfer of research results into practice. Emphasis is placed on mutual coordination, enabling Czech higher education to remain competitive with top global universities.

BUT's current standing among the top universities in CR is also evidenced by its **performance in international university rankings** such as **QS, THE, and GRAS Shanghai**, in which BUT consistently ranks ahead of most Czech universities and also has made significant progress in recent years. See, for example, the latest results in the **QS World University Rankings by Subject 2025**: <https://www.vut.cz/en/but/news-f19528/but-improved-its-position-in-global-qz-subject-ranking-in-electrical-engineering-civil-engineering-and-natural-sciences-d284329>.

The current **mission** of BUT is expressed in its official **Statute of BUT** (<https://www.vut.cz/en/board/internal-legislation-but/statute-of-but-d260207>, pages 1–2). However, the mission which cannot be reproduced here in full due to its length. In summary, the university's mission may be expressed as follows:

Brno University of Technology, true to its mission, strives to advance knowledge, intellectual wealth, and progress through its educational and research activities. It is part of the public university system and embraces the core principles of European higher education policy, subscribing to the values of the **European Higher Education Area (EHEA)** and the **European Research Area (ERA)**.

BUT is a **modern, research-based university** with a comprehensive academic profile that combines **engineering and natural sciences with architecture, fine arts, and design**, as well as **economics and management education**. As a member of a European university alliance, it is recognised as a **European university** and is actively building its profile as an international institution through its growing number of international students and extensive support for their studies. ...

BUT maintains a **balanced focus on both research and education**, including both basic and applied research. It views **knowledge transfer as its entrepreneurial interface**, where successful commercialization reflects the relevance and competitiveness of its research and education outputs. ...

With a strong sense of responsibility to protect the moral integrity and independence of the academic environment, and to serve as an impartial and trustworthy pillar of knowledge and values in society, BUT upholds **academic freedom and democracy**, along with the core values of open discourse and critical thinking. ...

The university's **basic organisational structure** is illustrated in the figure above and described in detail in **Section 4.1**. The full organisational structure, including representations of **governing bodies, management, oversight structures, and inter-unit relationships**, is provided in chapter **4.1**.

As of 2024, BUT employs 3,009 staff members, including 1,751 academic and research personnel, and has 17,600 students—making it the fourth largest university in the Czech Republic by these measures.

SWOT ANALYSIS

Strengths

- High-quality research teams with internationally recognized results.
- State-of-the-art research infrastructure, competitive at the international level.
- Strong competitiveness in securing EU and Czech grant funding.
- Comprehensive coverage of technological fields.
- Developed interfaculty and interdisciplinary cooperation (coordinated cross-faculty collaboration areas).
- Strong links between research topics and the needs of industry and practice.
- Shared research infrastructure offering open access and collaboration with high-tech multinational companies.
- Wide range of doctoral study programmes, with a significant share of PhD students (8.5%)—a key indicator of a research university.
- Strong performance in contract research (second most active university in the Czech Republic).
- High level of student involvement in research projects.
- Extensive collaboration with international institutions.
- Integration of artistic and research activities.
- Established system for intellectual property management.
- Active cooperation with regional innovation ecosystem stakeholders (South Moravian Innovation Centre (JIC), South Moravian Region, City of Brno) and use of incubators.
- Engagement with external partners and professional networks.
- Active implementation of the entrepreneurial university concept.

Weaknesses

- Significant financial dependence of R&D on public project-based funding.
- Lower level of international cooperation in some R&D areas.
- Low number of foreign professors and researchers.
- Limited involvement of international students in most doctoral programmes.
- Lower motivation among researchers for active commercialization of R&D results.
- Limited motivation among researchers to establish start-ups and spin-off companies.
- High administrative burden due to excess of reporting requirements to external bodies.

Opportunities from External Environment

- A wide range of national and international funding opportunities for R&D&I activities.
- Cooperation with leading international institutions and programmes supporting such collaboration.
- Increasing interest from industry and the private sector in research partnerships.
- Interdisciplinary research fields with high potential for new discoveries and cooperation.
- Significant support from the region; existence of regional and national innovation strategies.
- Demand for and support of high-potential spin-off and start-up companies.
- Cooperation with science, research and technology parks and professional platforms.
- Societal support for environmental protection and climate initiatives; demand for green technologies and energy solutions.
- Government commitment to support excellent research.
- Opportunities for collaboration within the Association of Research Universities, inter-university networks, and with the Czech Academy of Sciences.
- Invited and active membership in European university networks (e.g. CESAER), and membership in the Czech Association of Research Universities (AVUni), and participation in European networks of technical universities.

Threats from External Environment

- Absence of a stable and long-term national funding system for research activities.
- Fragmented grant system with excessive administrative burden and generally low success rates.
- Unstable project funding threatens the ability to maintain stable research teams and staff.
- Rapid development of new research capacities in the Czech Republic in the past decade creates competition for limited financial and human resources.
- Constantly changing Methodology for Evaluating Research Organisations and HEI (Methodology 17+, Methodology HEI2025+); absence of a final national Methodology.
- Disproportionate emphasis on publication outputs and undervaluation of applied research results in the national R&D evaluation (Module 1 of Methodology 17+).
- Top researchers being overloaded with non-research tasks and administrative responsibilities.
- Poorly designed legislation governing expert witness activities, which significantly restricts conditions for conducting expert work as a form of creative academic activity.
- Possible role duality between universities and the Czech Academy of Sciences in the national research system.

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: FACULTY OF ARCHITECTURE

FORD: 6 - Humanities and the arts

SOCIAL CONTRIBUTION OF THE EVALUATED UNIT

3.1 Introductory information about the unit under evaluation

The evaluated unit will describe its mission and vision and provide a general self-reflection of the societal contribution of R&D&I, along with its long-term goals in the fields it develops. The distribution of research activities by type of research will also be commented on.¹ The evaluated unit will describe its organisational structure and size (staffing, number of students, number of study programmes implemented, etc.) based on the data provided in annex tables 3.1.1 to 3.1.6.

Maximum 1000 words.

This is a non-rated indicator that serves as an introduction to the evaluated unit, providing context for data in indicators 3.2-3.7.

The **Faculty of Architecture (FA)** is currently the second smallest of the eight faculties of the **Brno University of Technology (BUT)**. It is ranked **201-260 in the QS World University Ranking**, which makes it one of the best faculties of architecture in the Central and Eastern European region (after e.g. TU Munich and TU Vienna).

Study programmes

The FA offers [bachelor's, master's and doctoral degree programmes in Czech](#) and also, from 2020 (bachelor's) and 2023 (master's) [degree programmes in English](#) in the fields of **Architecture and Urban Design**. It has recently accredited a new joint Master's degree programme in **Integrative Urban Studies** with the [University of Wrocław](#) and the [European Humanities University in Vilnius](#), and is currently preparing new interdisciplinary Master's degree and Lifelong Learning programmes in **Landscape Urbanism** together with Masaryk University and the Czech Academy of Sciences as part of the [EU-funded Acceleration of Green Skills and Sustainability at BUT](#) project. It provides also [short-term education](#) for exchange students. With the development of new study programmes, **the number of students has increased in recent years**.

FA students have won [awards](#) from the Czech Chamber of Architects, such as the [best diploma thesis 2021, 2022](#), the [Urban Design Award 2021](#) or the [OISTAT 11th Theatre Architecture Competition](#).

Structure

The FA is currently divided into eight departments:

[Department of Theory](#)

[Department of Monument Care](#)

¹ Basic, applied, contract, artistic research (see Definition of Terms in Methodology HEI2025+).

[Department of Design](#)
[Department of Urban Design](#)
[Department of Spatial Design](#)
[Department of Experimental Design](#)
[Department of Engineering](#)
[Department of Drawing](#)

Other units of the FA include a [Library](#), a [Computer centre](#) and a [Model centre](#) with 3D printing, NC machines, [robot](#) and other technologies available for staff, students, and the public. As part of the [NEXT VUT](#) project, the Model centre is currently expecting to receive around €700,000 in new machines and workshops.

The Marketing Office focuses on strategic partnerships, cultural grants and exhibitions. The Project Support Office, established in 2019, has recently grown in size following the success of several research and infrastructure grants in recent years.

[Gallery Mini](#) is a gallery platform organised by the FA. The FA also supported the [first start-up called BIOM](#). Finally, [SOFA](#), a student association of the FA, co-organises a number of activities, such as the [FINALS festival](#) or the [Bohuslav Fuchs Award](#) for the best studio work.

Mission and vision

The mission of the FA BUT is to provide high quality education in architecture and urban design, while providing relevant, independent and visible expertise on key societal issues related to the built and landscape environment, in line with the principles of the New European Bauhaus (sustainability, aesthetics, inclusion). Its main objective is to educate architects as independent, critical thinkers, capable of reflecting on the social context and in this context designing buildings, acting in public positions and shaping social debate.

The vision of the FA is to be a leading institution not only nationally but also in the European context, in terms of excellence in research and artistic output, and to increase its transfer potential, while maintaining and developing the quality of the curriculum, social relevance and international and interdisciplinary collaborations.

The FA follows the [Faculty Strategic Plan 2021+](#) with annual action plans. A new Faculty Strategic Plan 2025+ is currently being developed. The FA also follows the [key strategic areas of research of the BUT](#), i.e. it contributes to a sustainable and climate neutral built environment, future technologies or innovation for the digital era, for example with the [design and prototype of the CZNelson polar station in Antarctica](#).

Self-reflection

According to the international evaluation carried out in 2024, the FA's strongest assets are its research into the history of 20th century modernist architecture, with several relevant [publications](#) in this field (in line with the importance of the Brno modernist tradition in the global architectural heritage), and the [research](#), [outreach](#) and [exhibition](#) activities of all its design departments in [local](#) and [international](#) settings, as well as the development of [urban regeneration projects](#), [design-build projects](#), [revitalisation](#) of historic sites, [workshops](#) and other activities with [positive social impact](#) on local and often peripheral communities.

According to the international evaluation, the FA has also made significant progress in securing research funding, particularly in the area of applied research (namely the Technology Agency and the Ministry of Culture of the Czech Republic), institutional grants, and also contract research from municipalities and public institutions, often resulting in urban design studies or guidelines.

The measures taken by the FA in recent years to secure research projects and grants have been: a) stimulation of cooperation between the FA departments and also with departments within the BUT and other institutions (museums, national institutions, cities), b) stimulation of multidisciplinary potential with the integration of non-architectural experts in the departments, which enables scientific cooperation in related fields such as spatial planning, housing studies or building technologies, c) development of the Project Support Office, d) a [Faculty Development Projects programme](#) focusing on scaling up of artistic activities, and e) a [motivational reward programme](#). Other measures are currently being developed to further stimulate funding, including f) the establishment of research working groups to support the defragmentation and visibility of FA activities, and g) the development of research infrastructure in knowledge transfer and contract research.

The main focus of FA academics is on architectural design, including competitions and exhibitions, as most of academics are practicing architects, designers and artists. They generate so-called RUV points (system of evaluating of artistic academic work) through their practice, but also through projects related to studio work with students. Some of the artistic and scientific activities of the academics and students of the FA can be found at schoolofarchitecture.cz.

The FA is also aware of its social responsibility. It actively reaches out beyond its borders in the sense of cultivating the public sphere and focuses on activities in cooperation with the third sector, including exhibitions, placemaking and participatory design with the social and civic sector such as the [Vesna Lab](#). It also cooperates with state authorities and municipalities, for example in urban design competitions.

 Table 3.1.1 - Staffing per FTE²

Academic/ Professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	4.6/2.1	4.9/2.4	4.6/2.2	4.5/2.1	4.4/2.0	23.0/10.9
Associate Professor	11.5/1.2	10.1/1.0	9.2/1.0	9.1/1.2	9.2/1.9	49.1/6.3
Assistant Professor	15/3.8	14.9/4	15.1/3.7	15.8/3.6	17.2/3.9	77.8/19.0
Assistant	8.2/2.9	9.4/3.5	9.5/3.8	10.8/3.7	11.4/4.5	49.3/18.4
R&D Personnel ³	0/0	0/0	0/0	0/0	0/0	0/0
Researchers in other categories ⁴	5.7/2.1	1.0/0.3	1.4/0.2	1.1/0.5	0.8/0.4	10.0/3.6

² The average number of hours worked is calculated as the ratio of the total number of hours actually worked during the reference period, from 1 January to 31 December, by all staff (including agreement on work activity, excluding agreement on work performance) to the total annual working time pool per full-time employee. The full-time status of the worker in the evaluated unit is always reported. If an employee holds more than one type of full-time job within the evaluated unit, the total sum of the two shall be reported.

³ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

⁴ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

Technical and economic staff ⁵	30.4/16.8	32.4/20.0	31.5/20.0	31.5/21.6	33.1/23.2	159.0/101.7
Scientific, research and development staff involved in teaching activities	2.1/0.6	0/0	0/0	0/0	0/0	2.1/0.6
Early career researchers ⁶	0/0	0/0	2.8/0	0/0	0.3/0.3	3.1/0.3
Total ⁷	71.9/27.4	72.6/31.2	74.1/31.0	72.8/32.7	76.3/36.3	373.5/160.7

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

3.1.2 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2019 (numbers of physical employees and personnel)⁸

Academic/ professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	0	0	1	1	1	0	4	2
Associate Professor	0	0	0	0	0	0	2	1	5	0	2	0
Assistant Professor	0	0	4	0	3	0	4	2	0	0	0	0
Assistant	0	0	5	3	8	1	1	0	1	1	0	0
R&D Personnel ⁹	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁰	0	0	2	1	2	1	0	0	0	0	0	0

⁵ Who participates in the management and support of R&D&I in the institution.

⁶ See Definition of Terms in Methodology HEI2025+.

⁷ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

⁸ The total number of employees/workers as of 31st December of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

⁹ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁰ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

Technical and economic staff ¹¹	2	1	8	4	14	7	10	5	4	1	1	0
Scientific, research and development staff involved in teaching activities	0	0	0	0	3	1	0	0	0	0	0	0
Early career researcher ¹²	0	0	0	0	0	0	0	0	0	0	0	0
Total ¹³	2	1	19	8	30	10	18	9	11	2	7	2

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D Personnel, Researchers in other categories and Technical and economic staff are mutually exclusive, i.e. one staff member is reported in only one category. The categories of scientific, research and development staff involved in teaching activities and early career researchers are reported collectively for all the above-mentioned categories.

3.1.3 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2023 (numbers of physical employees and personnel)¹⁴

Academic/ professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	0	0	2	1	0	0	4	2
Associate Professor	0	0	0	0	3	1	4	1	1	0	2	0
Assistant Professor	0	0	2	0	12	2	5	3	1	0	0	0
Assistant	0	0	9	5	6	1	7	2	1	1	0	0
R&D Personnel ¹⁵	0	0	0	0	0	0	0	0	0	0	0	0

¹¹ Who participates in the management and support of R&D&I in the institution.

¹² See Definition of Terms in Methodology HEI2025+.

¹³ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I Personnel, Researchers in other categories and technical and economic staff.

¹⁴ The total number of employees/workers as at 31.12. of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

¹⁵ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

Researchers in other categories ¹⁶	0	0	0	0	0	0	2	2	0	0	1	1
Technical and economic staff ¹⁷	4	2	4	3	15	12	11	5	6	6	0	0
Scientific, research and development staff involved in teaching activities	0	0	0	0	0	0	0	0	0	0	0	0
Early career researcher ¹⁸	0	0	1	1	0	0	0	0	0	0	0	0
Total¹⁹	4	2	16	9	36	16	31	14	9	7	7	3

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

Table 3.1.4 – Students

Type of study	2019		2020		2021		2022		2023		Total	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Undergraduate	286	180	300	198	334	208	371	232	390	231	755	459
Master's ²⁰	153	106	153	89	142	85	139	86	149	97	439	283
Doctoral	47	26	56	27	58	29	53	26	53	25	92	47
Lifelong Learning Courses												
Total	486	312	509	314	534	322	563	344	592	353	1 286	789

¹⁶ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹⁷ Who participates in the management and support of R&D&I in the institution.

¹⁸ See Definition of Terms in Methodology HEI2025+.

¹⁹ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

²⁰ All master's degree students are listed, regardless of the length of their programme of study.

Table 3.1.5 - Study programmes in Czech/English

Type of study programme	Total ²¹ / Of which professional study programmes											
	2019		2020		2021		2022		2023		Total	
Undergraduate	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0	1 / 0	2 / 0	1 / 0
Master's	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	1 / 0	1 / 1	1 / 1	1 / 1	1 / 1	2 / 2	1 / 1
Doctoral	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0
Lifelong Learning courses												
Total	3 / 1	0 / 0	3 / 1	0 / 0	3 / 1	2 / 0	3 / 1	2 / 1	3 / 1	2 / 1	5 / 2	2 / 1

Note: For each SP type, enter the number of SPs in Czech language in the first cell and insert the number of SPs in English language after the slash in the same cell (e.g. 15/3), enter the number of professional SPs in Czech language in the second cell and insert the number of professional SPs in English language after the slash. Follow a similar procedure in the last column of the table (Total).

3.1.6 – R&D&I capacities

R&D&I field	FORD	FORD share [%]	Predominant type of research	Total share of industry group [%]
1. Natural Sciences	1.1 Mathematics		Zvolte položku.	0
	1.2 Computer and information sciences		Zvolte položku.	
	1.3 Physical sciences		Zvolte položku.	
	1.4 Chemical sciences		Zvolte položku.	
	1.5 Earth and related environmental sciences		Zvolte položku.	
	1.6 Biological sciences		Zvolte položku.	
	1.7 Other natural sciences		Zvolte položku.	
2. Engineering and Technology	2.1 Civil engineering	21.2	Basic Research	21.2
	2.2 Electrical engineering, Electronic engineering, Information engineering		Zvolte položku.	
	2.3 Mechanical engineering		Zvolte položku.	
	2.4 Chemical engineering		Zvolte položku.	

²¹ The total number of study programmes for which admissions have been announced in a given academic year.

	2.5 Materials engineering		Zvolte položku.	
	2.6 Medical engineering		Zvolte položku.	
	2.7 Environmental engineering		Zvolte položku.	
	2.8 Environmental biotechnology		Zvolte položku.	
	2.9 Industrial biotechnology		Zvolte položku.	
	2.10 Nanotechnology		Zvolte položku.	
	2.11 Other engineering and technologies		Zvolte položku.	
3. Medical and Health Sciences	3.1 Basic medicine		Zvolte položku.	0
	3.2 Clinical medicine		Zvolte položku.	
	3.3 Health sciences		Zvolte položku.	
4. Agricultural and veterinary sciences	4.1 Agriculture, Forestry, and Fisheries		Zvolte položku.	0
	4.2 Animal and Dairy science		Zvolte položku.	
	4.3 Veterinary science		Zvolte položku.	
	4.4 Other agricultural sciences		Zvolte položku.	
5. Social Sciences	5.1 Psychology and cognitive sciences		Zvolte položku.	8.0
	5.2 Economics and Business		Zvolte položku.	
	5.3 Education		Zvolte položku.	
	5.4 Sociology		Zvolte položku.	
	5.5 Law		Zvolte položku.	
	5.6 Political science		Zvolte položku.	
	5.7 Social and economic geography	8.0	Basic Research	
	5.8 Media and communications		Zvolte položku.	

	5.9 Other social sciences		Zvolte položku.	
6. Humanities and the Arts	6.1 History and Archaeology		Zvolte položku.	70.8
	6.2 Languages and Literature		Zvolte položku.	
	6.3 Philosophy, Ethics and Religion		Zvolte položku.	
	6.4 Arts (arts, history of arts, performing arts, music)	62.7	Basic Research	
	6.5 Other Humanities and the Arts	8.1	Zvolte položku.	
Total		100 %	-	100 %

RECOGNITION BY THE RESEARCH COMMUNITY

3.2 Recognition by the research community

The evaluated unit will briefly comment on its position in the research community. It shall consider individual and other prestigious R&D&I awards, participation of its academic staff in the editorial boards of international scientific journals, elected membership in professional societies, major invited lectures given by the evaluated unit's academic staff abroad or by foreign scientists and other relevant guests at the evaluated unit. Additionally, it will address the involvement of staff in the evaluation of national or European project/programme calls over the period of 2019–2023 based on the data provided in annex tables 3.2.1 to 3.2.5 (max. 10 most relevant items). If necessary, the evaluated unit shall list any additional services to the scientific community that it considers relevant.

Maximum 1000 words.

For the FA, recognition in the selected categories is particularly important in the category of elected memberships. In addition, for architecture, recognition by the professional community is also important, especially by winning awards.

Memberships in international professional societies and committees:

prof. Ing. arch. Vladimír Šlapeta, DrSc.

Member, [Akademie der Kuenste Berlin](#)

Honorary Fellow, [American Institute of Architects HonFAIA](#)

Honorary Fellow, [Royal Institute of British Architects HonFRIBA](#)

Honorary Fellow, [Royal Incorporation of Architects in Scotland HonFRIAS](#)

[Ehrenmitglied des Bundes deutscher Architekten BDA E.h.](#)

Member, [ICOMOS 20th Century Heritage International Scientific Committee](#)

prof. Ing. arch. Helena Zemánková, CSc.

Member, [HERITY Italia International Committee](#)

Member, [G.E.I.E. Koinetwork Paris](#)

Member, [Fondazione Romualdo del Bianco, Firenze](#)

Member, [Aphelia - International Humanities Association for Cultural Integrated Landscape Management](#)

doc. PhDr. Martin Horáček, Ph.D.

Member, [ICOMOS International Committee on Historic Towns and Villages](#), [ICOMOS 20th Century Heritage International Scientific Committee](#), [European Quality Principles Working Group](#)

Member, [Czech National Committee of ICOMOS](#) (president since 2024)

Member, [European Heritage Label Panel](#) (appointed by the European Commission on behalf of the European Parliament)

Desk reviewer, [World Heritage Centre](#) on behalf of the ICOMOS World Heritage Unit

Ing. arch. Radek Toman, Ph.D.

Member, [European Association for Architectural Education](#)

Ing. arch, MArch, Jan Kristek, Ph.D.

Member, [European Association for Architectural Education](#)

Ing. arch. Radek Suchánek, Ph.D.

Member, [Association of European Schools of Planning](#)

Monika Konrad, Msc.
 Member, [Association of European Schools of Planning](#)

Mgr. Tomáš Hoření Samec, Ph.D.
 Member, [European Network for Housing Research](#)

Mgr. Ing. Jan Malý Blažek, Ph.D.
 Member, [Society for the Advancement of Socio-economics](#) (2019)

Evaluation panels, working groups, architectural competitions

Members of the Faculty are active in evaluation panels – especially in the [National Accreditation Bureau for Higher Education](#) (see Table. 3.2.5.) and in national legislative working groups – e.g. [the Social Climate fund for Buildings](#) at the Ministry of the Environment, or [limited-profit housing associations](#) at the Ministry of Regional Development, and also in the wider professional community, serving as jurors in architectural competitions of the Czech Chamber of Architects, see [Svatopluk Sládeček](#), [Marek Štěpán](#) or [Michal Palaščík](#).

Awards and professional recognition

prof. Ing. arch. Vladimír Šlapeta, DrSc.
[Jean Tschumi Award for architectural writing and criticism 2023](#)
[Bene merentibus 2021](#)

Ing. arch. Marek Jan Štěpán
[Grand Prix of Architects 2023](#)
[Building of the year 2021](#)
[International design Award IDA 2021](#)
[Grand Prix of Architects 2020](#)
[International Frate Sole Award 2020](#) (finalist)
[Azure Magazine, The Best of 2020 – Top 10 Interiors from Around the World](#)
[Wooden building of the year 2020](#)
[Archbishop of Prague Award Patria Nostra 2020](#)
[European Union Prize for the Contemporary Architecture – Mies van der Rohe Award 2019](#) (nominee)

Ing. arch. Jan Hora
[Grand Prix of Architects 2023](#) (honourable mention)
[European Union Prize for the Contemporary Architecture – Mies van der Rohe Award 2019](#) (nominee)

MgA. Ing. arch. Vojtěch Jemelka
[Grand Prix of Architects 2021](#) (honourable mention)

Ing. arch. Tomáš Kozelský
[Czech Architecture Award 2021](#) (Award of the Ministry of Industry and Trade for the conversion of original industrial warehouses in a sustainable way)

Ing. arch. Ondřej Palenčar
[Grand Prix of Architects 2023](#)
[Czech Architecture Award 2021](#) (Nature Conversation of the Czech Republic Award for sensitive and environmentally friendly building design in a rural environment)

MgA. Svatopluk Sládeček

[Czech Architecture Award 2021](#) (Velux Award for Daylighting)

Ing. Zdeněk Vejpestek, Ph.D.

[Wooden construction of the year 2021](#)

Editorial boards

For members of editorial boards of international scientific journals see Table 3.2.2.

Moreover, Rostislav Koryčánek and Eva Truncová have been editors, and Barbora Ponešová and Jan Hora members of the editorial board of the important Czech architectural magazine [Era21](#) (ISSN 1801-089x). Petr Šmídek is member of the editorial board of [Intro magazine](#) (ISSN 2570-7744). Jan Kratochvíl is editor-in-chief of the online portal [Archiweb](#). Josef Chybík is member of the editorial board of [Energeticky soběstačné budovy magazín](#) (ISSN 2336-7881). Tomáš Hoření Samec was a guest editor of the [Czech Sociological Review](#) (ISSN 0038-0288).

International role

The FA has been successful in international partnerships, as evidenced by an increasing number of international teachers and students, as well as a high number of international workshops, and student and staff mobility.

In individual partnerships, the FA combines collaboration with practicing architects as well as theorists. In 2023, the FA has appointed an extraordinary professor, [Monika Konrad](#), an urban planner responsible for the [strategic plan of the city of Warsaw](#). Other lecturers include renowned Polish architects Szymon Rozwalka, Zuzanna Mielczarek and Kacper Kepinski, curator and editor of the book [Anthropocene](#), Alex Bykov, a Ukrainian architect responsible for the [Ukrainian Biennale exhibition in Venice](#), or Dutch architects Servie Boetzkes and Gabriel Peña.

FA also invites professionals and educators for short term events, see e.g., a lecture by [Zachary Mark Jones](#) or a joint workshop with partner universities from [CEEPUS Urban Innovation Network](#).

Every year FA hosts the International **Ph.D. Annual Conference on Architecture and Urbanism**, of which the [2023 Proceedings were listed in WoS](#) and the annual international conference [Standards and Technical Solutions for Earthen Architecture](#). In 2022 there was the conference [Czechoslovak Legacy in Subcarpathian Ukraine, Endangered Monuments and the Tasks of Heritage Conservation with an Emphasis on the Importance of Cultural Heritage](#).

The FA is a member of the European Association for Architectural Education ([EAAE](#)) and the Association of European Schools of Planning ([AESOP](#)), European Alliance of Universities Linking Society and Technology ([EULIST](#)), and coordinates the CEEPUS network called [ABCD](#) (Architecture, Built Environment, City and Design network); an educational exchange programme with universities in the Central and Eastern European region.

The FA collaborates with several leading institutions in the field, [including workshops with the AA School of Architecture, London](#). A long-term collaboration with TU Vienna has recently developed into a joint [EU Horizon project application](#) and a successful application for a [joint PhD workshop under the umbrella of AESOP](#), which will take place in 2026.

Table 3.2.1 - Prestigious R&D&I awards granted during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the award	Awarding institution
prof. Ing. arch. Vladimír Šlapeta, DrSc.	Jean Tschumi Prize, 2023	UIA, Copenhagen
prof. Ing. arch. Vladimír Šlapeta, DrSc.	Bene merentibus, 2021	Polish Association of Architects SARP
Ing. arch Filip Kinnert, Ph.D.	Jacques Derrida Prize 2023	Embassy of France in the Czech Republic
Ing. arch. Marek Jan Štěpán	European Union Prize for the Contemporary Architecture – Mies van der Rohe Award 2019 (nominee)	European Union
Ing. arch. Marek Jan Štěpán	Azure Magazine, The Best of 2020 – Top 10 Interiors from Around the World	Azure Magazine
Ing. arch. Marek Jan Štěpán	International Design Award IDA 2021	Farmani Group
Ing. arch. Jan Hora	European Union Prize for the Contemporary Architecture – Mies van der Rohe Award 2019 (nominee)	European Union
Ing. arch. Ondrej Palenčar	Czech Architecture Award 2021 (Nature Conversation of the Czech Republic Award for sensitive and environmentally friendly building design in a rural environment)	Czech Chamber of Architects
Ing. arch Ondrej Palenčar	Grand Prix of Architects 2023	Society of Czech Architects
Ing. arch. Tomáš Kozelský	Czech Architecture Award 2021 (Award of the Ministry of Industry and Trade of the Czech Republic for the conversion of original industrial warehouses in a sustainable way)	Czech Chamber of Architects

Note: Provide up to 10 examples.

Table 3.2.2 Participation of academic staff of the evaluated unit in editorial boards of international scientific journals during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of scientific journal, ISSN
prof. Ing. arch. Vladimír Šlapeta, DrSc.	Architektúra & urbanizmus (0044-8680) , Editorial board member
prof. Ing. arch. Vladimír Šlapeta, DrSc.	Studies in History and Theory of Architecture (2344-6544) , Scientific committee member
prof. Ing. arch. Vladimír Šlapeta, DrSc.	Architectus (1429-7507) , Scientific council member
doc. Ing. arch. Maxmilian Wittmann, Ph.D.	Urbanismus a územní rozvoj (1212-0855) , Editorial board member
prof. Ing. arch. Monika Mitášová, Ph.D.	Profil, The Contemporary Art Magazine (1335-9770) , Editorial board member
doc. PhDr. Martin Horáček, Ph.D.	Czech Journal of Historic Heritage Preservation (1210-5538) , Editorial board member
doc. PhDr. Martin Horáček, Ph.D.	Journal of Traditional Building, Architecture and Urbanism (2660-5821) , Member of scientific committee
doc. PhDr. Martin Horáček, Ph.D.	Protection of Cultural Heritage (2543-6422) , Advisory board member
doc. PhDr. Martin Horáček, Ph.D.	Journal of the Faculty of Civil Engineering and Architecture (1452-2845) , Editor
prof. PhDr. Pavel Šopák, Ph.D.	Časopis Slezského zemského muzea, Série B - Vědy historické (1211-3131) , Editor-in-chief

Note: Please provide up to 10 examples of academic staff participation in editorial boards of international scientific journals (e.g. editor, editorial board member, etc.).

Table 3.2.3 The most important invited lectures delivered by the academic staff of the evaluated unit at foreign institutions during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Invited lecture title	Name of host institution, or name of conference or event	Year
doc. PhDr. Martin Horáček, Ph.D.	City Planning According to Artistic (and Preservationists') Principles, or, Some Nineteenth-Century Lessons for the Twenty-First Century	Tunis: Academie des sciences des lettres et des arts	2019
doc. PhDr. Martin Horáček, Ph.D.	City Planning According to Artistic (and Preservationists') Principles	Guangxi Arts University	2019
prof. Ing. arch. Vladimír Šlapeta, DrSc.	Czech Bauhaus Students	Cultural Forum Potsdam	2019

prof. Ing. arch. Vladimír Šlapeta, DrSc.	Bauhaus and Czechoslovakia	Akademie der Kuenste Berlin, international conference	2019
prof. Ing. arch. Vladimír Šlapeta, DrSc.	Architectural Education in Czechia	Sao Paolo Academy of Fine Arts	2019
prof. Ing. arch. Vladimír Šlapeta, DrSc.	Preservation of Modern Architecture in Czechia	International Cultural Forum, Eremitage, St.Peterburg	2019
prof. Ing. arch. Vladimír Šlapeta, DrSc.	Bauhaus and Czech Architecture	Bauhaus International Conference, Technical University of Bialystok	2019
prof. Ing. arch. Vladimír Šlapeta, DrSc.	Bohuslav Fuchs	Plečnikova hiša Ljubljana	2020
prof. Ing. arch. Vladimír Šlapeta, DrSc.	KOLDOM in Czech Avant guard Architecture	National Gallery Bratislava	2022
prof. Ing. arch. Vladimír Šlapeta, DrSc.	Jan Kotěra and Jože Plečnik	Mestski muzej Ljubljana in occassion of Plečnik Exhibition	2022

Note: Provide up to 10 examples.

Table 3.2.4 - The most important lectures by foreign scientists and other guests relevant to R&D&I at the evaluated unit during the evaluation period

Name, surname and title(s) of the lecturer	Lecturer's employer at the time of the lecture	Invited lecture title	Year
Univ.-Prof. Dipl.-Arch. Michelle Howard	Akademie der bildenden Künste Wien	The Value of Uselessness of Architecture Education	2019
Dr. Dubravka Sekulić	Royal College of Art	Curriculum Revolution, Or Why Just Adding Women to the Broken System Is Not Enough	2019
Univ.-Prof. Mag. PhD. Elke Krasny	Akademie der bildenden Künste Wien	Critical care and urbanism for a broken planet	2020
Adjunt Prof. Joan Oackman	University of Pennsylvania	A brief history of architectural research	2019
Assoc. Prof. Matthew Soules	University of British Colombia	Icebergs, Zombies, and the Ultra Thin: Architecture and Capitalism in the 21st Cent.	2021

Dr. Zachary Marc Jones	Politecnico di Milano	Mega events	2021
Dr. Marija Marić	University of Luxembourg	What's in a name? Architecture and Real Estate.	2021
Prof. ir. Winy Maas	MVRDV, TU Delft (The Why Factory)	The New Old	2022
Dr. Kataryna Dydenko	Kharkiv National University of Civil Engineering, Vilnius Gediminas Technical University	Current situation of Ukrainian architecture	2022
Angelika Hinterbrandner	ETH Zurich	Practicing architecture	2023

Note: Provide up to 10 examples.

Table 3.2.5 - Involvement in the evaluation of national/European research project/programme calls relevant to the R&D&I area at the unit during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the research project/programme call	Name of the Contracting authority/guarantor of the project/programme call	Year
doc. PhDr. Martin Horáček, Ph.D.	European Heritage Label Panel member	European Parliament	Since 2021
doc. PhDr. Martin Horáček, Ph.D.	Desk reviewer, World Heritage Centre on behalf of the ICOMOS World Heritage Unit	ICOMOS	Since 2020
doc. PhDr. Martin Horáček, Ph.D.	National Accreditation Office for Higher Education member	National Accreditation Office for Higher Education	Since 2023
Ing. arch. Nicol Galeová	Member of the Council of Universities	Council of Universities of the Czech Republic	Since 2018
Ing. arch. Nicol Galeová	Member of the Architecture segment council of the Register of Artistic Outputs	Ministry of Education, Czech Republic	Since 2019
doc. Ing. Monika Petříčková, Ph.D.	National Accreditation Office for Higher Education evaluation member	National Accreditation Office for Higher Education	Since 2017
doc. Ing. arch. Nina Bartošová, Ph.D.	National Accreditation Office for Higher Education member	National Accreditation Office for Higher Education	Since 2023
doc. Ing. arch. Gabriel Kopáček, Ph.D.	National Accreditation Office for Higher Education member	National Accreditation Office for Higher Education	Since 2018

doc. Ing. arch. Jiří Palacký, Ph.D.	National Accreditation Office for Higher Education, Head of the Evaluation units	National Accreditation Office for Higher Education	Since 2020
doc. Ing. arch. Jiří Palacký, Ph.D.	Coordinator of the Jacques Derrida Prize for Social Sciences and Humanities for the Brno University of Technology	French Institute, Prague	Since 2023

Note: Provide up to 10 examples.

RESEARCH PROJECTS

3.3 Research projects

The evaluated unit shall list at most 10 (considered most significant by the evaluated unit) research projects/activities (regardless of whether they are supported by public funds or based on contract research²²) that it has implemented or participated in during the period of 2019–2023²³. This should be done from the full list in annex tables (Table 3.3.1–3.3.2)²⁴, regarding particularly the results achieved or the application potential of the projects. The unit should also describe how the research projects contributed to the mission and purpose of the evaluated unit. If the evaluated unit has been a participant in listed project, it shall indicate which other entities were involved and describe its contribution to the project. The interdisciplinary aspects of the projects will also be commented on, along with any collaboration with other units of the evaluated HEI.

Maximum 300 words per project.

While securing research funding remains a challenge for the design-oriented disciplines including architecture, the **FA has made significant progress during the evaluation period, particularly in the area of applied research**. Four projects were funded by the Technology Agency of the Czech Republic and two by the Ministry of Culture of the Czech Republic in collaboration with major cultural and research institutions, which is a historic achievement for the FA. In addition, one project was funded by the Czech Science Foundation. The experience from this period leads to further development of the project culture. Recently, FA members have for the first time applied for funding in excellence calls including Horizon, Czech Science Foundation Junior Star call, or COST Alliance (all waiting for results) (see section 3.7.).

In the area of knowledge transfer, **contract research was launched in 2021** as an opportunity to fund overheads of some of the studio activities, where collaboration with partners in real-life situations, mainly with municipalities, is crucial. Since then, contract research has continued to develop. In order to further stimulate knowledge transfer and commercialisation, a methodological guide for academics is currently being prepared.

Research at FA is also supported by **international funds**. For example, programmes such as Aktion, CEEPUS or German-Czech Future Fund make it possible to set up joint workshops with international partners, where artistic research can take place or to finance publications.

The FA has also been an **associated partner in international projects**. This included collaboration in the Austrian-Czech [Interreg project COL \(Centre for the restoration of the shared cultural heritage\)](#) with the cities of Znojmo and Retz and the University for Continuing Education Krems, or the EU-funded project [Res Urbanae](#) with TU Dresden and Université Bretagne Occidentale.

Institutional grants include **Special Research Grants**, which are popular source of funding, especially for doctoral students. Some of the topics include [Temporary use of unused objects: Electronic Database of Projects](#), or [Spatial planning tools and spatial development of rural settlements in Central Europe](#).

Another part of institutional projects, include [Faculty Development Projects](#). This programme, **launched in 2021** enables scaling-up of some of the artistic activities such as exhibitions and design and build projects, as well as publication efforts, including the book [Rural Landscaping and its Tools](#)

²² For the definition of contract research for the purposes of evaluation in the HE segments, see Article 2.2.1 of the Community Framework for State Aid for Research, Development and Innovation 2014/C 198/01.

²³ Regardless of whether the projects are completed or still ongoing, provided that at least part of the project was implemented during the evaluation period.

²⁴ The evaluated unit shall only fill tables that are relevant to it.

or the most commercially successful book in the history of BUT publishing house VUTIUM, [Apollo and Marsyas](#).

Finally, many artists/practicing architects produce their artistic outcomes and research independently of research projects, as the Czech academic system allows for the **evaluation of the work of architects in their practice through the so called RUV**.

The following list of projects (and results in the following section 3.4.) serves to illustrate the diversity of research and artistic activities at the FA.

PUTM: The contribution of applied arts and technical museums to the economic development and educational culture of Moravia and Czech Silesia: foundations - situation – perspectives

Provider: Ministry of Culture of the Czech Republic (NAKI)
 Project number: DH23P03OVV041
 Years of realization: 2023-2027
 Beneficiary: Masaryk University, Faculty of Arts
 Other participants: Brno University of Technology, Faculty of Architecture
 Technical Museum in Brno
 Total budget: € 720,000
 Budget intended for the FA: € 131,000
 URL: <https://starfos.tacr.cz/en/projekty/DH23P03OVV041>
<https://fa.vut.cz/projekt/PUTM/>
 Participating units of the FA: Department of Theory
 Principal investigator of the FA: prof. Ing. arch. Pavel Šopák, Ph.D.

The project focuses on the unique phenomenon of museums of applied arts and technology, which in their history have been among the most progressive types of museums in the Czech lands. The identification and categorisation of museum collections documenting applied arts, technology and science on the territory of Moravia and Czech Silesia responds to the need to explore the potential of cultural and industrial heritage from the perspective of (not only) collection objects stored in memory institutions. The result of the historical-museological research will be an extensive specialised database, which will enable the professional and non-professional community to get an overview of individual types of collections and their contents on the basis of pre-defined criteria. Other outputs of the project will be thematic monographs, journal articles, conferences and exhibitions with critical catalogues that will, among other things, elucidate the contribution of (Central European) museums of applied arts and technology to school education. The planned audio programmes will be primarily intended for pedagogical and educational purposes. The applied project combines the themes of art history, cultural heritage and technology studies, which are related to the university's strategy as well as to the FA's mission to implement the principles of the New European Bauhaus. It encourages strategic partnerships with museums and educational institutions.

One of the most endangered groups in the Historical Building Fund of the Czech Republic: unique technologies of earth buildings using piece building materials (mud lumps) and ways to save them.

Provider: Ministry of Culture of the Czech Republic (NAKI)
 Project number: DH23P03OVV049
 Years of realization: 2023-2027
 Beneficiary: National Institute of Folk Culture
 Other participants: Brno University of Technology, Faculty of Architecture

Total budget: € 604,000
 Budget intended for the FA: € 352,000
 URL: <https://starfos.tacr.cz/en/projekty/DH23P03OVV049>
 Participating units of the FA: Department of Engineering
 Primary Investigator of the FA: Ing. Zdeněk Vejpusťek, Ph.D.

The main objective of the project is to create a comprehensive tool for saving endangered historical earthen buildings and their structural design. The proposed procedure contributes to the deepening of interdisciplinary research and to the possibilities of using obsolete and unique building technologies. The project develops existing knowledge of the number, location, construction method, material composition and physical properties of earthen buildings. The emphasis is on the practical mastery of archaic design principles that would otherwise be lost. Earth buildings are one of the most endangered groups of historic buildings and are only preserved in fragments. The preservation of material and cultural phenomena (mud blocks in the shape of equilateral triangles) is of transnational importance, as these building blocks have no equivalent in Europe. The project will produce a map of the cultural heritage and significant historic earth buildings. The knowledge and proven methodologies will be used primarily in the construction of transferred objects in open-air museums and could also be applied in the field of heritage building conservation. Selected buildings will be made available to the public online in the form of a "virtual twin".

Passportisation of Theatres and Venues for Theatre Making

Provider: Technology Agency of the Czech Republic (TA ČR)
 Project number: TQ01000593
 Years of realization: 2023-2026
 Beneficiary: Janáček Academy of Performing Arts, Theatre Faculty
 Other participants: Brno University of Technology, Faculty of Architecture
 Total budget: € 402,000
 Budget intended for the FA: € 192,000
 URL: <https://starfos.tacr.cz/en/projekty/TQ01000593>
 Participating units of the FA: Department of Experimental Design,
 Department of Theory, Department of Monument Care
 Primary Investigator of the FA: Ing. arch. Nicol Galeová

The aim of the project is to establish a methodical way of collecting data on theatres and spaces for theatre making, and to create a comprehensive tool that would meaningfully provide the data needed for decision-making and action by the target groups. In order to validate the development of the tool, we have selected an appropriate sample of data providers that encompasses the diversity of the target groups. These groups are both suppliers of research data and users of future services, so the aim is to build mutual trust. The mission is to contribute to improving communication between owners, operators, architects and building designers and other active users of theatre making spaces and theatres in the country, in order to develop sustainable professional conditions for the creation of artistic content and artistic exchange. Applied research combines methods of architectural design and theatre making with project management of the built environment. It contributes to the FA's mission of exploring the potential of architectural design and stimulating strategic partnerships with theatres and cultural institutions.

Creative Software/Digital Neural Network Virtual Futurologist A°D°A

Provider: Technology Agency of the Czech Republic (TA ČR)

Project number:	TQ01000298
Years of realization:	2023-2026
Beneficiary:	Technical University of Liberec, Faculty of Mechatronics, Informatics and Interdisciplinary Studies
Other participants:	Brno University of Technology, Faculty of Architecture The Academy of Fine Arts in Prague
Total budget:	€ 547,000 EUR
Budget intended for the FA:	€ 79,000 EUR
URL:	https://starfos.tacr.cz/en/projekty/TQ01000298
Participating units of the FA:	Department of Theory
Primary Investigator of the FA:	prof. Ing. arch. Monika Mitášová, Ph.D.

The aim of the project is to increase the information and data literacy of students and the professionals from the fields of technical sciences, humanities and arts. In particular, through the possibility and ability to use a new digital tool - neural networks and artificial intelligence, and thus enable users not only effective, but also creative orientation in the abundance of data and information resources within the range of topics of their own profession, for which A°D°A will be trained. Understanding the interrelationships in the dynamic system of the current world and creating models for predicting its development increases the degree of adaptability of the whole society to possible future developments - creativity and adaptability are the basic components of resilience. The applied research contributes to the BUT university research strategy and to the FA mission, combining the emerging technologies with creative industry and architecture thinking and education, and stimulating partnerships with technology and humanities and arts institutions.

Historic houses of Jihlava - evaluation of their architectural, urban, historic and spatial values and the examination of the possibilities of their sensitive adaptations, in the context of current transformations of the historical city center

Provider:	Technology Agency of the Czech Republic (TA ČR)
Project number:	TL02000310
Years of realization:	2019-2022
Beneficiary:	Brno University of Technology, Faculty of Architecture
Other participants:	Archaia Brno, z.ú. City of Jihlava
Total budget:	€ 204,000 EUR
Budget intended for the FA:	€ 114,000 EUR
URL:	https://starfos.tacr.cz/en/projekty/TL02000310
Participating units of the FA:	Department of Urban Design
Primary Investigator of the FA:	doc. Ing. arch. Karel Havlíš, Ph.D.

The aim of the project was to create, in cooperation with the City of Jihlava and the NGO Archaia, which specialises in archaeological research on building sites, a comprehensive set of materials that could help to effectively prevent damage to the monumental, architectural and urban values of historical buildings in the city of Jihlava. The results of the architectural study included a research report with recommendations for about 30 buildings owned by the city, a special map implemented in the GIS system of architectural and urban values of the historical centre of Jihlava, and an educational trail. The application potential of the research was stimulated by the effective cooperation with the City of Jihlava, which ensured that the work on the treatment of city-owned buildings was included in the city's strategic plan. The cooperation with Archaia led to the

improvement of professional practices in the future development of the historic centres of Czech cities. As such, the applied research combines methods of architectural design and heritage conservation making with project management of the built environment. It contributes to the FA's mission of exploring the potential of architectural design and stimulating strategic partnerships with municipalities and civic institutions.

The influence of the type and location of the urban structure on the sustainable spatial development

Provider:	Czech Science Foundation (GA ČR)
Project number:	GA17-26104S
Years of realization:	2017-2019
Beneficiary:	Brno University of Technology, Faculty of Architecture
Total budget:	€ 151,000
URL:	https://starfos.tacr.cz/en/projekty/GA17-26104S
Participating units of the FA:	Department of Urban Design
Primary investigator:	doc. Ing. arch. Gabriel Kopáček, Ph.D.

The project was based on the assumption that different types of urban structures and their location within the urban fabric affect the quality of life of local inhabitants, i.e. social coexistence, environmental quality, economic costs, but also the sustainable development of the city as a whole. Using selected Central European cities as examples, the project defined characteristic basic types of urban structures and examined their relationship to sustainable spatial development. The project evaluated the fulfilment of specific sustainable development indicators for each of the characteristic places studied and proposed types of urban structures that could be most suitable for the long-term development of cities. This basic research project contributed to the mission of the FA by studying urban structures in the Czech Republic and preparing data sets available for further cooperation with cities.

Clay for people. Environmentally and economically friendly community buildings made of unfired clay

Provider:	Specific university research grant
Project number:	FA-S-21-7541
Years of realization:	2021-2024
Beneficiary:	Brno University of Technology, Faculty of Architecture
Total budget for the FA:	€ 61,000
URL:	https://www.vut.cz/en/rad/projects/detail/32785
Participating units of the FA:	Department of Engineering
Primary Investigator:	Ing. Zdeněk Vejpustek, Ph.D.

Unlike professional construction, community building activates and strengthens both the community and the individual's relationship with the building. This has a positive impact on the use, maintenance and durability of the built environment. Clay has great potential for community building due to its characteristics (cheap, accessible, non-hazardous, easily repaired and recyclable). The research aimed to provide the missing knowledge, technical documentation and craft skills that currently hinder the development of this type of construction. The project tested several construction methods, including a copper patination workshop, a clay oven decoration workshop, and the construction of a [columbarium in Mořice](#), as well as producing several publications and organising a conference. The [construction](#) was part of a summer school. Rowland Keable, Chairman of the Earth Building UK and Ireland Association, Honorary Associate Professor of the UNESCO Chair

on Earthen Architecture, took part in the whole event. As such, the project was an important stimulus for the forthcoming DH23P03OVV049 project supported by the Ministry of Culture of the Czech Republic (see above).

System of housing in the extreme world of (not only) Antarctica

Provider: Specific Research University Grant
 Project number: FA-S-20-6498
 Years of realization: 2020-2021
 Beneficiary: Brno University of Technology, Faculty of Architecture
 Total budget for the FA: € 13,600
 URL: <https://www.fa.vutbr.cz/pages/prispevek.aspx?ID=3672&lang=en>
<https://www.vut.cz/en/rad/projects/detail/31750>
 Participating units of the FA: Department of Experimental Design
 Primary Investigator of the FA: B.Arch. Martin Kaftan, MSc., Ph.D.

The aim of the project was to design a systemic building solution for use in the extreme conditions of Antarctica. The focus was on the energy concept, carbon footprint, modularity and other aspects relevant to the conditions of the most remoted dwellings. The first application goal was to support the development of the Czech polar station CzEcoNelson on Nelson Island. The project resulted in software to calculate solar radiation and PV potential. The main outcome was the architectural design of the polar station. This project was further developed in collaboration with Masaryk University, respectively The Czech Antarctic Programme, and resulted in the creation of the prototype station, which can be seen in from the FA building.

Exhibition venues in European cities

Institutional development support – Faculty Development Programme
 Project number: FRP2022PPČ61
 Years of realization: 2022-2023
 Beneficiary: Brno University of Technology, Faculty of Architecture
 Total budget for the FA: € 5,810
 URL: <https://dspace.vut.cz/items/cc4a11e9-4f9d-4c75-a633-3639712a8876>
 Participating units of the FA: Department of Urbanism
 Primary Investigator: Ing. arch. Lenka Štěpánková, Ph.D.

The Faculty Development Programme is designed to scale up research and artistic output, often building on previous research projects - in the case of this project, a publication entitled Exhibition Venues in European Cities. The project was a follow-up to the Specific Research Grant FA/FAST-J-19-5903 entitled Characteristics of European Exhibition and Trade Fair Venues, which aimed to identify the cultural-historical value of exhibition sites in European cities and to show, through concrete examples, how they could be developed or protected during site transformations. Research was carried out on selected European exhibition sites. The results of these projects contributed to a better understanding of the historical significance of exhibition sites in the Czech Republic. The author of the book and principal researcher of both projects is currently an architect at the Brno Exhibition Centre, where she is developing a [living lab project](#) that focuses on topics such as smart city or future mobility.

Workshop in observatory Prostějov

Prostějov observatory - Contract research
 Project number: SR152101001

Years of realization: 2021
 Beneficiary: Brno University of Technology, Faculty of Architecture
 Total budget for the FA: € 1,650
 URL: <https://www.vut.cz/en/rad/projects/detail/33655>
 Participating units of the FA: Department of Spatial Design
 Primary Investigator: Ing. arch. Jan Mléčka, Ph.D.

In 2021, cooperation with the Olomouc Museum of Art and the Prostějov Observatory took place within the framework of contract research. Under the direction of Jan Mléčka, a workshop was organised with the participation of students, which resulted in conceptual proposals for the use of the Prostějov Observatory building, which were presented to representatives of the Olomouc Museum of Art, the City of Olomouc and the Olomouc Region. This project was the FA's first official contract research, as previously such cooperation with municipalities and cultural institutions had been often informal unpaid basis or based on donations. Contract research with municipalities and local and regional authorities, institutions and companies is in line with the FA's knowledge transfer strategy.

Table 3.3.1 Projects supported by public funds

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands EUR) ²⁶ (Note: The exchange rate CZK/EUR used is 1/25,35)				
		2019	2020	2021	2022	2023
Technology Agency of the Czech Republic	TL02000310, Historic houses of Jihlava - evaluation of their architectural, urban, historic and spatial values and the examination of the possibilities of their sensitive adaptations, in the context of current transformations of the historical city center	30.57	30.57	17.29	13.28	
Czech Science Foundation	GAČR 17-26104S, The influence of the type and location of the urban structure on the sustainable spatial development	53.39				

²⁵ If the provider is from abroad, please indicate the provider's country of origin in brackets. For the determination of the country of origin of the provider, the place of residence of the provider is decisive.

²⁶ Indicate the total amount expressed in thousands of CZK and the conversion of the total amount into Euro.

Ministry of Culture of the Czech Republic	MK152001001 Gallery of architecture		3.95			
Ministry of Culture of the Czech Republic	MK152101002 Gallery of architecture – exhibition activities			11.83		
Ministry of Culture of the Czech Republic	MK152101003 Gallery of architecture: “City conflicts”			1.78		
Ministry of Culture of the Czech Republic	MK152201002 Gallery 45000I –Space for engaged architecture				11.83	
Ministry of Culture of the Czech Republic	MK152201001 Exhibition "Tracing Spaces: Stop and GO"				1.18	
Ministry of Culture of the Czech Republic	MK152301003 Gallery 45000I - Exhibition Programme 2023					7,10
Ministry of Culture of the Czech Republic	MK152301004 Gallery 45000I - Exhibition MOHRF					1,18
Ministry of Culture of the Czech Republic	MK152301005 Gallery 45000I - Opencall 2023					1,18
Ministry of Culture of the Czech Republic	MK152302004E Status of the artist - Koryčánek - Comprehensible architecture					4,33
Ministry of Culture of the Czech Republic	MK152302001E Status of the artist – Rozwalka studio					7,61
Ministry of Culture of the Czech Republic	MK152302002E Status of the artist – Bykov studio					5,09
Ministry of Culture of the Czech Republic	MK152302003E Status of the artist - Kepinski, Mielczarek studio					14,92
Ministry of Education of the Czech Republic	Institutional support on development	57.31	58.79	57.57	62.14	59,17
Ministry of Education of the Czech Republic	OPRDE EV902004005 MeMoV VUT II.- International research mobilities				28.91	25,41
Ministry of Education of the Czech Republic	Specific university research grants	44.42	39.45	39.40	39.45	47,34
Total		185.69	132.76	127.87	156.79	173.33

In the role of another participant						
Provider ²⁷	Project name	Support (in thousands EUR) (Note: The exchange rate used is 1/25,35)				
		2019	2020	2021	2022	2023
Ministry of Culture of the Czech Republic	DH23P03OVV041 PUTM: The contribution of applied arts and technical museums to the economic development and educational culture of Moravia and Czech Silesia: foundations - situation – perspectives					21,22
Ministry of Culture of the Czech Republic	DH23P03OVV049 One of the most endangered groups in the Historical Building Fund of the Czech Republic: unique technologies of earth buildings using piece building materials (mud lumps) and ways to save them.					48.48
Technology Agency of the Czech Republic	TQ01000593 Passportisation of Theatres and Venues for Theatre Making					19.38
Technology Agency of the Czech Republic	TQ01000298 Creative Software/Digital Neural Network Virtual Futurologist A°D°A					3.84
Total		0	0	0	0	92.92

²⁷ Ibid.

Table 3.3.2 - Contract research activities

Client ²⁸	Activity name	Revenue (in thousands EUR)				
		2019	2020	2021	2022	2023
Museum and gallery in Prostějov	SR152101001 Workshop in observatory Prostějov			1.65		
Metr2develops.r.o.	SR152101002 Galgenberg Olomouc				2.21	
City of Lipník nad Bečvou	SR152201001 City of Lipník nad Bečvou				4.87	
Museum of Art Olomouc	SR152201005 Trienále SEFO'24				0.079	0.29
City of Jihlava	SR152201002 City of Jihlava – workshop with students				0.98	
City of Brno	SR152201004 City of Brno, Roundabout Křídlovická				0.039	1.58
City of Brno	SR152301001 Brno-Chrlice townhall					1.00
City of Olomouc	SR152201003 City of Olomouc					6.49
Total				1.65	8.18	9.36

Note: List and describe contract research activities with a revenue in a given calendar year, regardless of the amount of financial revenue.

²⁸ If the client is from abroad, indicate in brackets the country of origin of the client.

3.4 Research results with existing or prospective impact on society

The evaluated unit shall briefly comment on a maximum of 10 (considered most significant by the evaluated unit) research results already applied or realistically heading towards application during the period of 2019–2023, based on the overview annex table 3.4.1 (it is recommended to indicate results with a link to projects listed in indicator 3.3). The evaluated unit must demonstrate in its description that the research results have led or will soon lead to positive impacts²⁹, on society (e.g. description of how the results are used by various users, the range of persons/institutions for which the result is relevant, measurable economic impacts, etc.). The evaluated entity shall indicate in its commentary whether the gender dimension is considered in these results and discuss the impacts of the results regarding sustainability.

Maximum range 300 words/result.

Yoga Garden + Gallery

Author: mgr inž. arch. Szymon Rozwalka, Department of Experimental Design, Ing. arch. Kristýna Smržová, Department of Spatial Design

Year of realization: 2019

Architecture design; certification: AKX

URL: [Archdaily](#), [Archello](#), [Azure Magazine](#)

The project of the reconstruction of the historic factory hall for the new functions of the gallery and yoga centre uses the potential of the industrial heritage without an orthodox fear of change. The change is not only in the function. The building has also been radically transformed. The change is mainly based on the 'carving out' of two separate new courtyards from the former factory hall: the entrance courtyard and the back courtyard. The first courtyard creates the external space with two main entrances to the separate functional spaces: Yoga Centre and Gallery. It not only provides additional light to the interiors, but also allows for the creation of a new garden. The garden separates the internal (intimate) spaces of the yoga centre from the external public entrance zone. The entire backyard is used for the garden. Both vegetative parts not only allow to bring new greenery (so needed in the city) and to make the designed spaces more attractive, but they also keep rainwater in the city (the water retained in the drainage layer of the gardens is used by the vegetation of the gardens). The project serves the local cultural and yoga community in Brno. The gender balance of the project is reflected both in the collaborative team and in the intention of the client (yoga centre). The project has been certified by the RUV certifiers with the highest code AKX, where A stands for original artistic achievement of fundamental and revelatory significance, K for large scale and X for significant awards and social relevance. It has been featured in local and global media.

House Stara Cervena Voda

Author: Ing. arch. Ondrej Palenčar, Department of Urban Design

Year of realization: 2020

Architecture design; certification: AKX

URL: [Archdaily](#), [Archello](#), [Archetizer](#)

The property is located in the centre of Stara Cervena Voda village in the former Sudetenland in the Jeseníky Mountains. Originally there was a building on the plot with economic facilities in the form

²⁹ See Terms definition.

of a shed and a barn in the back. The author decided to leave the granite walls of the barn as a reminder of the great masonry skills of the original inhabitants. However, the family house, which was built of mixed marl stone and brick, was already in a desolate state and could not be saved. Instead of being dumped, most of the stones were recycled and used to fill gabion fences.

The new timber construction of the family house was placed between the original granite walls of the barn. A ventilated gap was left between the new building and the original, which was clad from above. To improve thermal insulation, the perimeter walls were lined with unfired brick and the interior with clay plaster. The exterior is covered with tanned spruce wood. This method of facade protection originated in Japan (shou sugi ban). However, it has been used in Central Europe for several centuries, mainly as a modification of the underground parts of wooden fence posts. The house for Ondrej Palenčar's parents **won the Czech Nature Conservation Agency (AOPK) Award for sensitive and environmentally friendly building design in a rural setting at the [Czech Architecture Awards 2021](#)** and was **nominated for the Archdaily's international Building of the Year award**. It has been certified by the RUV certifiers with the highest code AKX.

Church of Beatified Restituta

Author: Ing. arch. Marek Štěpán, Department of Design

Year of realization: 2019

Architecture design; certification: AKX

URL: [Dezeen](#), [Worldarchitecture](#), [Archdaily](#)

Architect Marek Jan Štěpán worked on the idea of this church for 30 years. It is the first church dedicated to the Blessed Marie Restituta, who was born about 1 mile from the site. A rectangular plateau is laid out on the plot, which defines the sacred district. The church is located in the heart of the settlement, at the mouth of the old scratch ravine. There are three basic masses on it - the church, the tower and the spiritual centre (designed by Zdeněk Bureš). The church has a circular ground plan. The sky is reflected in the colourful ring window that surrounds the church just under the roof. One could say that the circle hovers over Lesná or, on a figurative, transcendental level, that the sky hovers over Lesná. The interior of the church is an inner universe. The soft and slender lines of the structure create a disembodied interior space, which is shaped by the light coming from the circular window above. The gender balance of the project is reflected in its inclusivity - the church serves everyone in the local community. This project has been certified by the RUV certifiers with the highest code AKX. It demonstrates the impact of architecture on church, spirituality and the sense of community. **The project was awarded 1st prize at the Grand Prix of Architects in 2020**, and has been featured in local and global media.

Abbatiale de Payerne

Author: prof. Ing. arch. Ivan Koleček, Department of Monument Care

Year of realization: 2020

Architecture design; certification: AKX

URL: [Swissinfo](#), [Espazium](#)

The restoration of the abbey church in Payerne: The abbey of Payerne has been listed as a historical monument since 1900 and is the largest Romanesque church in Switzerland. It is one of the Cluny monasteries from the 11th century, situated in an exceptional position in the town centre. Its walls now house a school, a museum and the town hall. It was built after winning a public architectural

competition. Extensive restoration work resulted in a new layer of contemporary architecture. One of the exceptional works is the innovative use of vertical anchors. High-tech technology was applied to thousand-year-old architecture threatened with collapse. This project was certified by the RUV certifiers with the highest code AKX. It demonstrates how new technologies can be used to preserve cultural heritage.

Extension of Elementary School in Vřesovice

Author: Ing. arch. Jaroslav Sedlák, Ph.D., Department of Urban Design

Year of realization: 2020

Architecture design; certification: AKX

URL: [RIBA Journal](#), [Detail.de](#), [Architektur-online](#)

When the Municipality of Vřesovice agreed with the Church on the transfer of the rectory and the parish estate into the municipal property, the Church wished that the village should not let the whole area fall into disrepair. Thus, since 2013, the main building of the presbytery has been a primary school, and two years later, on the ground floor of the two wings of the building, a day-care centre with a kitchen and a dining room, which are also used by the primary school, was set up. Another part of the building had to be converted into two classrooms and two vocational rooms. The last part was the original gym attached to the baroque building, which was to be converted into a modern gym and two club rooms. The need for the reconstruction arose from the need to increase the capacity of the school, to save the rapidly decaying roof trusses of the baroque complex and to rectify the unsatisfactory condition of the courtyard. The whole complex was built in stages, its different parts serving different purposes. Likewise, its reconstruction has been gradual, depending on the needs of the municipality, its financial resources and the state of each part. This diversity, both operational and technical, has therefore logically become the main starting point of the reconstruction project and represents the complex qualities of the sensitive reuse approach. This project has been certified by the RUV certifiers with the highest code AKX. It demonstrates how modern architecture can be used to preserve cultural heritage, and how a sensitive approach can serve to meet the needs of the various stakeholders in the local community.

Cloud – Interactive conceptual object

Author: Ing. arch. Marek Štěpán, Department of Design

Year of realization: 2022

Architecture design; certification: AKX

URL: [Archiweb](#), [iDnes](#)

The traditional meeting place on the terrace of the Museum of Art and Industry in Brno includes a staircase and a ramp, several mirrored functional objects (corridor, café and toilet) and the conceptual design object "Cloud". Among other things, it responds to the changing urban situation around the institution. The cloud is an outdoor visual element of the change in the nature of exhibitions from art-industrial to design. The cloud is designed as a pneumatic cushion with an internal overpressure of 2 layers. These layers form a synclastically curved surface of matt ETFE film in the shape of a kidney. The cushion is secured against excessive deflection from wind and snow by a mesh of stainless steel cables above and below the top and bottom films. Inside the pillow is a sophisticated RGB lighting system that allows the light to be changed and the internal features to be projected. The lighting is complemented by a sound system with two characters - ambient and

interactive. The multimedia activity of the Cloud, which covers an area of 300 m², is focused on special occasions and events at the Museum of Art and Industry. The Cloud is a temporary exhibition and a kind of embodied heart of the gallery, but also an important intervention in the public space of Brno.

Jože Plečnik and Prague

Author: prof. Ing. arch. Vladimír Šlapeta, DrSc., Department of Theory

Year of realization: 2020

Exhibition

Place: Ljubljana, Prague

URL: [Architekturoweek, Embassy of the Czech Republic in Ljubljana](#)

The installation of an open-air exhibition that allowed the Slovenian public to get to know Jože Plečnik's work even during the COVID-19 pandemic, when most of Slovenia's cultural life was severely curtailed. Finally, in the very centre of Ljubljana, on the banks of the Lublanica River, in the Krakovski nasip area, large-format panels were installed in a minimalist metal frame, where curator Vladimír Šlapeta introduced the Slovenian public to J. Plečnik's work created during his time in Prague through 22 panels. Visitors could also view the exhibition through online media and streams. The project was organised by the Prague Castle Administration and the Czech Embassy in Ljubljana in cooperation with the Architecture Week festival, thus contributing to the Czech-Slovenian partnership. The touring exhibition premiered in the Theresianum at Prague Castle and in Lány in 2022.

Vladimír Šlapeta in the evaluated period curated several other exhibitions, including exhibitions **Czech Architecture since 1900 at Prague Castle with 34,000 visitors in 2021**, **Czech and Slovak Architecture 1918-1993-2023 at Prague Castle with 35,000 visitors in 2023** and the same exhibition organised at [Bratislava Castle](#) with 100,000 visitors.

Comprehensible architecture – Educational programmes

Authors: Mgr. Rostislav Koryčánek, Ing. arch. Anna Kotlabová, Ing. arch. Adéla Šoborová

Year of realization: 2023

Educational programmes

URL: <https://fa.vut.cz/projekt/srozumitelnaarchitektura/>

The Comprehensible Architecture project was an innovative interdisciplinary research and educational initiative of the FA and the Department of Art Education of the Faculty of Education of the MUNI aimed at communicating architecture. Its main objective was to increase the competence of creative learning teachers in the field of architecture at all levels of education. The activities were based on experiential learning, which led the participants to perceive and learn from space, thus increasing sensitivity to the environment in which we live. The project developed educational programmes with educational videos and methodological guides for kindergartens, primary schools and high schools. The programmes have been developed and tested in real-life situations.

A prefabricated floor element

Main author: Ing. et Ing. Petr Hlavsá, Ph.D., Department of Engineering

Year of realization: 2023

Patent

URL: <https://www.vut.cz/en/rad/results/detail/185080>

The prefabricated floor element is a product designed to solve a common and pressing problem in modern timber construction. Its added value is the ability to solve the problems of acoustic and thermal stability of the room in one technological step, while eliminating the undesirable wet process. According to the research carried out, no similar solution has been patented anywhere in the world. The floor component in question is described in detail in the patent documentation and offers several significant benefits to society, particularly in the context of energy efficiency, sustainable construction and quality of life. The main societal benefits include, in particular, an improvement in the quality of use of the indoor environment of timber-framed buildings, which represent an environmentally progressive way of constructing buildings, particularly residential buildings, where the aforementioned weaknesses are a frequent reason for their rejection. The following companies have expressed their interest in cooperation: Drvíst s.r.o., Stavitelství Stehlík s.r.o. and Akuste s.r.o. The use of the described floor elements can significantly expand the construction of modern wooden buildings in the Czech Republic. The prefabricated floor element was developed with the support of internal grants **FAST-J-12-1768 Numerical verification and optimisation of prefabricated elements for dry floor structures of modern wooden buildings, FAST-S-12-32 Sound insulation properties of floor structures of modern wooden buildings using prefabricated concrete elements.**

Specialized map of architectural and urban values of the historical center of Jihlava

Author: Ing. arch. Vratislav Zíka, Department of Urban Design

Year of realization: 2022

Specialized map (Nmap)

URL: <https://starfos.tacr.cz/vysledky-vyzkumu/RIV%2F00216305%3A26410%2F22%3APR37633>

Finally, a specialised professional map of Jihlava shows significant architectural and urban elements of the historical city centre with accompanying short text descriptions and illustrations. It was integrated into the GIS system of the city and is used as a basis for assessing the impact on the urban and architectural values of the historic city centre when planning investment activities or property sales. It serves as a tool for the work of the city's heritage conservation department. The map is a result of the project **TL02000310, Historic houses of Jihlava - evaluation of their architectural, urban, historic and spatial values and the examination of the possibilities of their sensitive adaptations, in the context of current transformations of the historical city center.**

Table 3.4.1 - Overview of research results in the period under evaluation

Type of result ³⁰	Year of application	Name
Architecture Design (AKX)	2019	Yoga Garden + Gallery
Architecture Design (AKX)	2019	House Stara Cervena Voda
Architecture Design (AKX)	2020	Church of Beatified Restituta
Architecture Design (AKX)	2020	Abbatiale de Payerne
Architecture Design (AKX)	2020	Extension of Elementary School in Vřesovice

³⁰ Specify the specific type of result. Add rows as needed.

Architecture Design (AKX)	2022	Cloud – Interactive conceptual object
Exhibition	2020	Jože Plečnik and Prague
Educational programmes	2023	Comprehensible architecture – Educational programmes
Patent	2023	A prefabricated floor element
Specialized map (Nmap)	2022	Specialized map of architectural and urban values of the historical center of Jihlava

Note 1: Please list and describe the results already applied in practice or heading towards application in practice with existing or prospective impact on the society (e.g. domestic or foreign patents, sold licenses, spin-offs, prototypes, varieties and breeds, methodologies, significant analyses, surveys, expert outputs for policymaking or other forms of non-publication outputs, etc.). Indirect results of research, development and creative activities with documented societal impact, e.g. expert activities, services to the public/government/scientific community, may also be reported.

TRANSFER OF RESULTS INTO PRACTICE

3.5 Transfer of results into practice

The evaluated unit shall briefly describe its system for transferring results into practice. It shall also indicate up to five of the most typical users of its results, whether in the university environment or in the non-university application/corporate sphere, detailing how it collaborates with them and how it seeks out new users (using a maximum of five specific examples).

It will also indicate whether and how it commercialises R&D&I results (e.g. selling licences, setting up start-up or spin-off companies, etc.)³¹, providing brief description of the commercialisation methods used. The effectiveness of the transfer of results and the commercialisation of R&D&I results will be described using a selection of results (max. five) listed in annex table (Table 3.4.1).³²

Additionally, the evaluated unit shall briefly comment on the funds received during the period of 2019–2023 from non-public, non-grant sources (e.g. licences sold, spin-off revenues, donations, etc.). A full summary shall be provided in annex table (Table 3.5.1).

Maximum 500 words plus 200 words for each provided example of finding a new user of results and commercialization.

The FA has secured the system of knowledge transfer at the central level according to [Directive No.10/2023 Registration, Protection and Rules of Commercialisation of Industrial Rights of the BUT](#). Following this Directive, the FA has a Knowledge Transfer Manager and a Knowledge Transfer Officer.

The FA provides methodological support to the academics, especially in the field of contract research, which has been developed at the FA since 2021. For the next period, FA seeks to secure funding for active support of academics in the transfer of knowledge (production, management, PR and other services) and potentially develop capacities to run a FA spin-off, Centre for the support of municipalities, which would enable further commercialization and scaling up of the activities.

The FA provides project support in terms of identifying project proposals, project administration and management.

Knowledge transfer through architectural design

The main method of transferring results into practice at the Faculty of Architecture is through concrete projects and realizations of architectural design by practicing architects. The transfer of results into practice is therefore different from other disciplines - the members of the FA are themselves in "the practice". They focus on a variety of projects: in addition to family houses, they win awards for their work with public and private investors, including cooperation with schools, cultural institutions and private companies. Architects are also successful in competitions for public spaces of various kinds, but also for the conservation of monuments or sacred architecture (see sections 3.2 and 3.4). The relationship between this independent artistic work and the FA is twofold: on the one hand, the themes, structure or use of materials are reflected in the studios, which are taught by practicing architects; on the other hand, the results are submitted to the RUV (Register of Artistic Results of the Ministry of Education of the Czech Republic), where they are certified and

³¹ In the case of military HEIs, their specific position is taken into account when evaluating the commercialisation/evaluation of R&D&I results.

³² If the commercialisation of R&D&I results is carried out in this way.

awarded points, from which the FA receives income. Some of the highest ranked certified AKX results are listed in section 3.4.

Knowledge transfer through applied research

The second important element of knowledge transfer is applied research. While the architectural design output (RUV points) has remained stable over the last 5 years (it is very much dependent on the size of the faculty staff and their capacity and cannot be fundamentally increased), the applied research element has developed significantly over the last few years and the FA has succeeded in winning several grants. Partners in applied research include cultural institutions (museums, theatres) and municipalities, which can benefit from specific architectural knowledge, such as methodological guidelines or interdisciplinary studies, but also more specific partners such as the The Czech Antarctic Programme (see section 3.3.). It is expected that the FA's potential in applied research will grow with other topics such as landscape and urban planning, housing affordability or climate neutral building technologies and techniques, and the FA has therefore strategically assigned researchers relevant to these topics. The potential for applied research also lies in increased RIV (Register of Scientific Results of the Ministry of Education of the Czech Republic).

Knowledge transfer through contract research, non-contractual collaboration and institutional funding

The third important element of knowledge transfer at the FA is contract research, which is mainly aimed at municipalities, but also cultural institutions and private companies. Contract research is a relevant source of income, especially to pay for the high costs associated with running high quality studios, and especially to pay for the material costs related to studio outcomes. Knowledge transfer at the FA is therefore not only linked to academics, but also to students who learn practical skills in real-life situations and with impact in local communities. For recent contract research, see section 3.3.

As a result of studio work in particular, but also more generally of the FA's third role, transfer is often non-contractual and funded from e.g. Faculty Development Projects. The freedom associated with non-contractual collaboration is important for the independence of the artwork and will therefore always remain an important element of the transfer. Furthermore, the transfer can take the form of interventions in the public space, where there is no specific stakeholder/partner, but the impact is extended to the public (see especially the exhibition activities in section 3.6). Here too, however, the FA intends to increase the external cultural/research funding activities (see section 3.3).

Knowledge transfer through establishing spin-offs / start-ups

The FA is aware of its commercialisation potential, particularly in terms of working with municipalities and other public sector partners. However, it is beyond the current project management capacity of the FA to offer such services on demand. We expect that with the increased capacities built from research projects, we will be able to establish the Centre for the Support of Municipalities spin-off company in the new period, which would enable us to commercialize some of the results from the applied research and/or studio work.

In the area of start-ups, **the FA, in cooperation with the Faculty of Civil Engineering BUT, successfully supported the establishment of a student start-up company called BIOM research project, s.r.o.** This is a company focused on research and development in the area of sustainable urban development using cutting-edge technologies. Their goal is to transform urban environments into resilient units that produce local water, food and energy resources with minimal environmental

impact. They develop and model innovative systems of urban agriculture and urban planning, focusing on renewable energy sources that can be integrated into existing buildings, promoting local production and consumption, reducing traffic and contributing to a sustainable urban lifestyle. For details see here: <https://www.vut.cz/en/rad/transfer/entrepreneurship/start-up-spin-off/biom>

Knowledge transfer through selling licences, expert opinions, donations

The FA does not focus on the sale of licences. The only licence sold was to the Masaryk Oncological Centre in 2021.

The FA does not provide expert evidence. The only expert opinion provided was for the Regional Court in Ostrava in 2020. The academics/practicing architects often take the role as jury members in architectural competitions (see section 3.2.).

Donations are used as one of the possible contributions of municipalities, cultural institutions and private companies in terms of cooperation with the FA. Donations in the evaluated period included additional work related to the applied research project with the town of Jihlava, cooperation with the town of Polička, the Czech-German Future Foundation or the Czech Architecture Foundation that supported production of the Gallery of Architecture Brno (GAB), see section 3.6. The private partners who donated to the FA included Komerční banka, Vítkovice, a.s. or PREFA Brno.

Table 3.5.1 - Summary of non-public revenues received during the period under evaluation

Type of revenue	Revenue (in thousands EUR)				
	2019	2020	2021	2022	2023
Licences sold			1.58		
Expert evidence		1.17			
Donations	9.08	20.62	12.85	1.97	2.13
Total	9.09	21.79	14.43	1.97	2.13

Note: Enter funds raised for R&D&I from non-public sources besides grants or contract research (e.g. licences sold, spin-off company revenues, donations, etc.) in the calendar year.

POPULARIZATION OF VAVAI

3.6 The most important activities in the field of popularization of R&D&I and communication with the public

The evaluated unit shall briefly describe its main activities related to the popularisation of R&D&I and communication with the public (e.g. popularisation lectures, citizen science initiatives, etc.) during the period of 2019–2023 and provide up to 10 examples that it considers the most significant.

Maximum 500 words plus 200 words for each example given.

The FA is aware of its social responsibility. It actively reaches out beyond its borders in the sense of cultivating the public sphere and focuses on activities in cooperation with the third sector, including exhibitions, lectures, placemaking and participatory activities with the social and civic sector, especially in Brno, but also in other cities and regions, including international exhibitions and workshops.

During the evaluation period, it was particularly active in outreach activities. For three years, the FA curated and organized the public gallery [Gallery of Architecture Brno \(GAB\)](#). Moreover, under the support of the FA, PhD student Eva Truncová established a new gallery in semi-public space in Brno [Gallery 450001 – Space for Engaged Architecture](#). Finally, the local community around the FA visit exhibitions curated by the Faculty members in the [Gallery MINI](#) at the entrance to the faculty.

In GAB, but also in other venues, the FA also organized series of public lectures and activities [No More Architecture](#) and [Are we architects?](#). Since 2023, it has organized the [Vector of Poverty](#) multisection activity, which is currently ending with several exhibitions in Brno, but also in Havlíčkův Brod and Nové Město na Moravě. The Vector of Poverty has included many activities with the main aim of communicating to the public the role of architecture and design in mitigating societal pressures. Among many others, this includes the [Vesna lab](#) collaboration with the [Women's Education Institute in Brno](#), which serves as a humanitarian and distribution centre for families in need, especially for refugees from Ukraine, or the recent ['Building back better: A journey into Odesa's future'](#), a workshop on the post-war reconstruction of Odesa's held in Warsaw and Lviv, as part of UN Habitat Initiative, which will be exhibited in Kyiv and the French Pavillon at the Venice Architecture Biennale 2025.

The FA is also strong in the presentation of the knowledge transfer, especially when it comes to the results of studio work in collaboration with cultural institutions and municipalities. This has been further stimulated by the contract research activities, but not only, as exhibitions and public presentations also take place with the non-contract collaborations. See for example presentations in [Olomouc](#), [Opočno](#) or recently in [Rosice](#) or [Brno Husovice](#). A long-term collaboration with the Moravian Library on the [\(re\)visions of libraries for the 21st century](#), led to public presentations of student's work, as well as to the [first realization of public library reconstructions](#) based on the students' projects.

The FA is also active in the field of popularization. For many years, it has been a regular participant in the [Scientist's Night](#), or the [Days of Architecture](#). This experience has led to the co-organizing of events, such as the [Creative Technology](#) or [Pecha Kucha nights](#) in recent years.

Gallery of Architecture Brno

Type of event: Gallery production and curatorship of exhibitions

Year or realization: 2020-2023

Project/Supported by [Czech Architecture Foundation](#), [Ministry of Culture of the Czech Republic](#), City of Brno, Aktion

URL: <https://galeriearchitektury.com/tag/vystavy/>

For three years, the FA operated the Gallery of Architecture Brno (GAB), an important cultural institution in the Brno city centre. Through a curated selection of exhibitions, it aimed to make contemporary architectural themes accessible to the general public. The gallery reopened in October with the exhibition "[Prachovnice](#)" (The Dustbin). After a pandemic break, it resumed its exhibition activity with an art installation on Dominican Square called "[Pod Záštitou](#)" (Under the Patronage). The installation was intended to draw attention to the pointlessly recurring architectural competitions for a water feature on the aforementioned square in Brno. In the autumn, the GAB hosted an exhibition by the Hungarian artist [Andrea Schmied: Private Views](#), which highlighted the issue of accessibility to views of the iconic Manhattan skyline in New York. The exhibition was accompanied by a series of lectures building on this theme. The GAB exhibition programme concluded with [Gabu Heindl: Urban Conflicts - A Housing Manifesto](#). Through an exhibition, an interactive installation and a series of lectures, the exhibition addressed the topical issue of housing affordability and standards.

Prostor pro angažovanou architekturu - Space for engaged architecture

Type of event: Curatorship of exhibitions
 Year or realization: 2022-2023
 Project/Supported by [Czech Architecture Foundation](#), [Ministry of Culture of the Czech Republic](#),
 City of Brno, Aktion
 URL: <https://galeriearchitektury.com/tag/vystavy/>

As part of GAB, the FA created its own exhibition platform - Space for Engaged Architecture. The project actively communicated architecture to the professional and general public through workshops, exhibitions, round tables and lectures. Unconventional locations were used for the exhibitions. "[Tracing Spaces: Zastavit a jet. Uzly transformace a přechodu](#)" (Tracing Spaces: Stop and go. Knots of transformation and transition) by Austrian authors Michael Hieslmair and Michael Zinganel highlighted the issue of logistics across Europe. It was exhibited in the former warehouse of [OC Prior](#), a brutalist building next to the Brno train station that is currently being demolished. [Dear architects: Architecture as labour](#) was an exhibition curated by Karolína Plášková. The exhibition (re-)opened the issue of working conditions not only for young architects. It was accompanied by a series of roundtables with international guests, which included [Angelika Hinterbrandner](#), [Charlie Edmonds](#) or [Marisa Cortright](#), but also invited local architectural studios and FA alumni, such as [M2AU](#).

45000 I: Volume for engaged architecture

Type of event: Gallery production and curatorship of exhibitions
 Year or realization: 2022+
 Project/Supported by [Ministry of Culture of the Czech Republic](#)
 URL: <https://www.archspace.cz/45-000-I>

As part of the Space for Engaged Architecture project, the 45000I Gallery: A Volume for Engaged Architecture was founded in an unused shop window in the passageway in the city centre between Šilinger Square and shopping mall Velký Špalíček. The gallery was founded by doctoral student Eva Truncová.

The first exhibition in the 45000 I: Volume for Engaged Architecture was an installation by Eva Truncová entitled [Under surveillance](#), which focused on security and control in public space. The second exhibition, [Ukrainian Heritage Under Threat: Wartime Kyiv](#), responded to current events in Ukraine through photographic documentation. Another exhibition, [Dynamický blok: Keep calm and](#)

[discourse](#) (Dynamic Block: Keep Calm and Discourse), was realised on the basis of the open call. Since then, the gallery has invited authors directly and through open calls.

Gallery Mini

Type of event: Gallery production and curatorship of exhibitions
 Year or realization: 2019+
 Project/Supported by Institutional support
 URL: <https://www.fa.vutbr.cz/pages/prispevekPevny.aspx?ID=1421>

In the entrance of the building, the FA operates a Gallery called mini. This gallery serves for small exhibitions from the local authors, as well as FA academics and students. It enables to present some of the work from [international workshops](#), [research activities](#), as well as [FA studios](#) and builds the wider community around FA, its alumni, friends and interested public.

Srozumitelná architektura - Comprehensible architecture

Type of event: Educational programme
 Year or realization: 2023
 Project/Supported by Ministry of Culture of the Czech Republic (Next Generation EU), G.A. 0 313000221
 URL: <https://fa.vut.cz/projekt/srozumitelnaarchitektura/>

The Comprehensible Architecture project was an innovative interdisciplinary educational initiative of the FA and the Department of Art Education of the Faculty of Education of the MUNI aimed at communicating architecture. Its main objective was to increase the competence of creative learning teachers in the field of architecture at all levels of education. The activities were based on experiential learning, which led the participants to perceive and learn from space, thus increasing sensitivity to the environment in which we live. The project developed educational programmes with educational videos and methodological guides for kindergartens, primary schools and high schools. The programmes have been developed and tested in real-life situations.

Vector of Poverty

Type of event: Series of lectures, studio work, exhibition
 Year of realization: 2023-2025
 Project/Supported by: Institutional support

Interdisciplinary research and exhibition project Vector of Poverty was a multi-semester project that aimed to activate the creative and research potential of the FA in cooperation with other institutions and personalities. In 2023, [Vector of poverty started with studio work](#) and further in 2024 it [combined lectures, consultations and workshops](#) by experts who were able to look at the topic from different perspectives and thus convey the many dimensions of the problem addressed. In 2025, the results of the research and studio work were transformed into an [exhibition and presented to the public in cooperation with the Brno House of Arts](#) and other cities and towns in Czechia.

Široký perimetr architektury - The wide perimeter of architecture

Type of event: Series of lectures, studio work, exhibition
 Year of realization: 2023
 Project/Supported by: Institutional support

URL: <https://www.fa.vutbr.cz/pages/prispevek.aspx?ID=6632&lang=cz>

The Department of Experimental Design celebrated eight years of its activities together with the third birthday of the creative hub Kumst in Brno. The exhibition presenting the activities of the youngest of the institutes of the FA was accompanied with a panel discussion and book launch about future of cities entitled BIOM. Kumst is a creative hub that concentrates young creative professionals of various professions, including architecture.

TITUL (TITLE)

Type of event: Exhibition

Year of realization: 2021+

Project/Supported by: Institutional support

URL: <https://www.fa.vutbr.cz/pages/prispevek.aspx?ID=6610&lang=cz>

At the end of each academic semester, the traditional Finals! Festival takes place at FA, thanks to which the FA opens its academic environment to the public and offers the opportunity to get an overview of the work of all the studios and other activities. The festival includes annual Bohuslav Fuchs Award ceremony. Every June and July then, the exhibition of final bachelor's and master's theses of students of the FA, entitled TITLE takes place in various places. In 2022 the exhibition took place in [Kumst hub](#), in 2023 in the premises of the [Alfa arcade on Poštovská Street](#) in the Brno city centre. The exhibition was opened on the eve of the graduation ceremony, which took place in the HaDivadlo theatre that operates in the same building.

Are we architects? (on education, architectural profession and institutional critique)

Type of event: Series of public lectures

Year or realization: 2019

Project/Supported by: Ministry of Culture of the Czech Republic, City of Brno, Aktion

URL: <https://schoolofarchitecture.cz/tag:lecture>

The public lecture series Are We Architects? (on education, architectural profession and institutional critique) included lectures by [Michelle Howard](#): The Value of Uselness of Architectural Education, [Dubravka Sekulić](#): Curriculum Revolution, or why just adding women to the broken system is not enough?, [Peter Staub](#): New schools of thought, [Joan Ockman](#): A brief history of architectural research, [Tatjana Schneider](#): Architecture schools should be dissolved, [Johan de Walsche](#): Architectural design education – questioning the research - teaching nexus, [Bart Lootsma](#): The practice of theory - between history, criticism and speculation, [Miodrag Kuč](#): The culture of disagreement. Politicising spatial practices and [Yanze Wang](#): Evolution and revolution of architectural education in China (1920-1990) The lectures were [streamed online](#).

No More Architecture

Type of event: Series of public lectures

Year or realization: 2020

Project/Supported by: Ministry of Culture of the Czech Republic

URL: <https://fa.vut.cz/pages/prispevek.aspx?ID=3669&lang=cz>

The public lecture series No More Architecture opened a public debate on sustainability of architecture and the construction industry. At the same time, real estate is the most lucrative form of investment, leading to speculation, the financialisation of housing, the privatisation of services

and public space, all of which contribute to the further growth of social inequalities. This series of guest lectures discussed what role architecture should play and how it can contribute to improvement of living conditions for all without having a negative impact on the environment. It discussed the architecture of care, maintenance, renovation and reuse. An architecture that serves the community rather than capital, that does not damage but rather enhances social relations and environmental processes.

The series included a lecture by [Alejandro del Castillo](#) of the collective n'UNDO, [Fran Edgerley](#) of the collective Assemble, a lecture by the [atelier d'architecture autogérée](#) and [Elke Krasny's](#) lecture on critical care. These lectures were organized during lockdown and streamed online.

IMPLEMENTATION OF RECOMMENDATIONS

3.7 Implementation of the recommendations in Module 3

The evaluated unit will briefly describe how it has implemented the recommendations for Module 3 from the previous evaluation period, if applicable.

Maximum 1000 words.

The M3 2020 evaluation panel report made recommendations in particular to:

Finding new ways to attract contract research and research grants + Increase activity in analyses, surveys or studies, continue active collaboration with other faculties

Enhance the internalisation of activities

Create spin-off companies in collaboration with other faculties.

In general, the FA has made progress in all of these areas during the evaluation period. The actions taken are listed below.

1. With regard to the **recommendation to find new ways of attracting contract research and new grants and to increase activities in the area of analysis, surveys and studies**, the FA has
 - 1.1. Established the Project Support Office (see section 3.1.).
 - 1.2. Established the Faculty Development Programme and a Motivational Programme to stimulate the project culture (see section 3.1.).
 - 1.3. Successfully completed the Technology Agency of the Czech Republic project on the historical centre of Jihlava, which resulted in a specialised map or a research report (see section 3.3.).
 - 1.4. Successfully participated in several calls for applied research projects, including three projects from the Technology Agency and two NAKI projects from the Ministry of Culture (all starting in 2023), which will provide many results in this area in the coming years (see section 3.3.).
 - 1.5. Successfully initiated contract research particularly with municipalities and cultural institutions (see section 3.3.).
 - 1.6. In addition, the FA's strategy to increase its analytical potential has led to the appointment of extraordinary professor Monika Konrad, who has extensive international experience with urban planning, including the coordination of the Strategic Master Plan of the City of Warsaw; and also to the appointment of two experienced social scientists, Jan Malý Blažek and Tomáš Hoření Samec, who have an extensive portfolio of publications and projects in related fields of urban studies and housing, including [a methodological guide to collaborative housing](#) certified by the Ministry of Regional Development of the Czech Republic, Horizon 2020 reports and other documents. Recently, they were responsible for the submission of the first EU Horizon Europe or GA ČR Junior Star project in the history of the FA (see section 3.2.).
2. Regarding the **recommendation to increase the internalisation** of activities, the FA has
 - 2.1. Accredited a joint Master's degree programme in Integrative Urban Studies (see section 3.1.).
 - 2.2. Secured funding for long-term partnerships with international lecturers from the Netherlands, Poland, the UK and other countries (see section 3.2 and 3.3.).
 - 2.3. Made progress in organising international lecture series, workshops and summer schools in cooperation with international institutions (see sections 3.2. and 3.6.).

2.4. Played an active role in the ABCD CEEPUS network and the EULIST alliance (see section 3.2).

2.5. As a consequence and final result of the increased internationalisation, it succeeded in being accepted for the 2026 AESOP PhD workshop proposal together with the Vienna University of Technology, and was also invited to submit an EU Horizon 2020 project on climate neutrality of peri-urban districts (see section 3.2.).

Regarding the **recommendation to collaborate with other faculties to create spin-off companies or implement other forms of commercialisation of research, development and innovation**, the FA

3.1. Analysed its capacities and aimed to develop both structural changes and infrastructure support to develop various forms of contract research and commercial knowledge transfer

3.2. Analysed capacities for the creation of the Centre for Municipal Support (spin-off company in preparation)

3.3. Supported the VUT start-up called BIOM in cooperation with the BUT Faculty of Civil Engineering (see section 3.5).

The 2024 International evaluation, which took place in the autumn of 2024, made the following recommendations, among others, which are already being considered and implemented:

- **Encourage collaboration between departments and avoid duplication of effort**
- **Pursue funding, including EU Horizon Europe, and increase participation in international consortia**
- **Support/motivate/mentor the specific lines of inquiry of each teaching/research staff member**
- **Define principles for collaboration between social scientists and architects in the Faculty.**

Since autumn, the FA has:

- Submitted its first Horizon Europe project, coordinated by the TU Vienna.
- Submitted its first Erasmus Mundus project as part of the consortium of the newly accredited joint Master's programme.
- The newly established FA Platform for Research and Art serves to coordinate and strategically plan and structure the research and artistic activities of the FA and to support academics in developing projects in collaboration with their colleagues.
- The new structure of research/art working groups has been proposed.
- The two social scientists have moved from the Department of Theory to the Department of Urban Design (future Department of Urban and Landscape Design), with which they already collaborate and where future collaborations are likely to take place in activities related to multi-stakeholder projects in both urban and rural areas. They, together with a colleague from the Department of Urban Design published first journal article In *Urbanismus a územní rozvoj*
- The Project Support Office has been expanded in size.

Finally, **the FA is currently developing a new strategic plan 2025+**. The main strategic tasks related to R&D&I and its contribution to society include:

- (1) **Restructuring of the FA into a smaller number of larger departments**, in line with other faculties of architecture in Europe, in order to eliminate fragmentation of teaching, design and research activities and to stimulate impact:
- Department of Architecture
 - Department of Urban and Landscape Design
 - Department of Engineering
 - Department of Architectural Media
 - Department of Theory and Transdisciplinarity.
- (2) **Stimulating of the research culture** through a range of activities, including
- The development of an FA Platform for Research and Art, a critical discussion and knowledge platform for academics at FA.
 - Establishing research working groups on strategic themes such as affordable housing, resilient landscape planning, low carbon technologies or experimental design.
 - Establishing a Centre for the support of municipalities, a spin-off company for contract research at FA
 - Increasing the number of applications for research funding, including calls for excellence
 - Increase international research collaboration
 - Develop an interdisciplinary and transdisciplinary environment to bridge some of the research challenges
 - Develop a publication strategy for all departments
 - Innovate the PhD programme and increase the involvement of PhD students in research teams.

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: Faculty of Business and Management (FBM)

FORD: 5 - Social sciences

SOCIAL CONTRIBUTION OF THE EVALUATED UNIT

3.1 Introductory information about the unit under evaluation

The evaluated unit will describe its mission and vision and provide a general self-reflection of the societal contribution of R&D&I, along with its long-term goals in the fields it develops. The distribution of research activities by type of research will also be commented on.¹ The evaluated unit will describe its organisational structure and size (staffing, number of students, number of study programmes implemented, etc.) based on the data provided in annex tables 3.1.1 to 3.1.6.

Maximum 1000 words.

This is a non-rated indicator that serves as an introduction to the evaluated unit, providing context for data in indicators 3.2-3.7.

Self-assessment:

The Faculty of Business and Management (FBM) aims to be a recognized leading research and educational institution. R&D&I activities of FBM make meaningful contributions to society by tackling critical challenges in corporate sustainability, innovation, legal compliance, and security. They support the transition to more responsible investment practices, improve the efficiency of business operations through digital transformation, enhance tax compliance frameworks, reducing legal uncertainty for businesses, and promote knowledge transfer across universities and industries, creating a more interconnected academic and business ecosystem. By addressing specific needs in family business succession and valuation, the research helps ensure the long-term sustainability of this sector. Additionally, advancements in monitoring technology and energy market prediction contribute to greater security and stability. FBM research activities not only provide practical, actionable solutions but also foster entrepreneurship, innovation, competitiveness, creating a more resilient and sustainable future for both businesses and society. [The Institutional Evaluation](#) (for the period 2019 - 2023), which is a part of the university's system of quality control of the research environment, stated that FBM addresses relevant and topical research topics and produces results of a good standard in European comparison. The quality of the results stands up to international comparison and develops the state of the art in the application area.

Since the establishment of the Faculty of Business and Management in 1992, education and research in the field of social sciences has been focused on the corporate sector and the development of entrepreneurship. As an integral part of the Brno University of Technology (BUT), FBM plays an

¹ Basic, applied, contract, artistic research (see Definition of Terms in Methodology HEI2025+).

important role contributing valuable expertise in the commercialization of research outcomes and fostering innovation and entrepreneurship across the university. This expertise is transferred to other faculties through various programs and activities of the [BUT ContriBUTe Innovation and Entrepreneurial Ecosystem](#) and through supporting related knowledge transfer initiatives.

During the evaluation period, the faculty's vision was defined as follows: A leading, respected and inspiring faculty, characterized by unique approaches in the field of education in economics, management and ICT disciplines with an emphasis on the business sphere, achieving top scientific performance, developing cooperation at the level of enterprises, state administration and other participating organizations and institutions, clearly defining its position both in the Czech Republic and in the context of international competition.

The follow-up mission was formulated as follows: Faculty provides education in economics, management and computer science and conducts scientific research that pursues the latest theoretical and practical solutions with respect to the needs of regional and global economies. We educate our students to become socially responsible, broad-minded, and to find employment in practice.

As can be seen from the mission statement, the focus of FBM is primarily on education, with an average of 2/3 of staff capacity dedicated to teaching and 1/3 to research. Research at FBM is strictly driven by its applicability, whether in the management of companies and organisations or in the direct application of knowledge in teaching. In the period 2019 to 2023, FBM academic staff addressed one basic research project of the Czech Science Foundation, seven projects supported by the Technology Agency of the Czech Republic that were applied in practice, one international research project supported by Visegrad funds, two strategic projects announced by the Ministry of the Interior of the Czech Republic in the field of critical infrastructure security, and twelve contract research projects mainly for partners from corporate practice.

Regarding [the organizational structure](#), FBM comprises four departments: Economics, Management, Finance, and Informatics. The distribution of research capacities corresponds to the focus of the institutes (see Table 3.1.6 - R&D&I capacities), with the main research field of the faculty being FORD 5.2. Within the social sciences, part of the capacity was also focused on FORD 5.5 Law, where research on corporate tax legislation and international taxation was conducted. In FORD 1.1 Mathematics, research was focused mainly on the development of new methods for solving dynamic models of business management and optimization of business processes. In FORD 1.2 Computer and information sciences, research was oriented towards information management and cyber security. Research in FORD 2.2 Electrical engineering, Electronic engineering, Information engineering was focused on critical infrastructure security, where academics conducted business impact assessments in addition to the research itself. Research in FORD 2.7 Environmental engineering addressed the microeconomic analysis of the efficiency of renewable energy and raw materials. FBM employs a diverse academic and technical staff, supported by detailed data on staffing by age, gender, and job title (2019–2023).

The faculty implements undergraduate, master's, doctoral, and lifelong learning programs, with steady student enrollment numbers. It promotes cross-disciplinary work, leveraging resources like the multimedia laboratory for research and teaching innovations. The faculty offers bachelor, master, and doctoral programmes in Czech and English languages with part-time options. In 2023, there were 1 533 students studying in five bachelor programmes. Three of these programmes are of a professional character – Process Management, Managerial Informatics, and Entrepreneurship and Small Business Development, and two are of an academic character – Business Economics, and

Accounting and Taxes. At the Master's level, all five programmes are of an academic character – Information Management, International Business and Management, International Economics and Business, Strategic Company Development, and Accounting and Financial Management. There were 802 students in the master's programs. The doctoral study programme is Company Management and Economics. There were 53 students at the doctoral study.

International collaboration and research are key to developing pedagogy and ensuring high-quality education. International dimension of education is evident from the study programme offer. Two study programmes, Accounting and Taxes and Accounting, and Financial Management are certified by International Association ACCA. In addition to classical programmes, the faculty provides two MBA programmes: US-MBA in cooperation with University of St. Francis, MBA in Information Management, and a range of professionally designed courses focused on management and business education. The stability of the development of the study programmes is assured by the fact that in 2023 the faculty has defended its right to carry out habilitation and professorship procedures in the field of Economics and Management on the basis of a decision of the National Accreditation Bureau for Higher Education (for a maximum period of 10 years).

Table 3.1.1 - Staffing per FTE²

Academic/ professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	8.8/3.0	8.4/3.0	8.8/3.0	9.1/2.8	7.9/2.3	43.0/14.1
Associate Professor	18.3/3.8	17.7/3.9	16.8/4.4	19.1/6.2	19.9/6.4	91.8/24.7
Assistant Professor	32.4/12.0	32.6/11.7	33.2/12.4	29.8/11.4	29.6/11.5	157.6/59.0
Assistant	1.7/1.6	2.6/2.2	4.5/2.8	6.0/4.2	5.1/3.5	19.9/14.3
R&D Personnel ³	0/0	0/0	0/0	0/0	0/0	0/0
Researchers in other categories ⁴	1.1/1.0	1.9/1.4	1.7/0.5	0.6/0.4	1.9/0.4	7.2/3.7
Technical and economic staff ⁵	48.6/34.3	40.2/27.7	38.9/27.8	38.0/27.8	37.5/27.8	203.2/145.4
Scientific, research and development	0/0	0/0	0/0	0.6/0.4	1.7/1.2	2.3/1.6

² The average number of hours worked is calculated as the ratio of the total number of hours actually worked during the reference period, from 1 January to 31 December, by all staff (including agreement on work activity, excluding agreement on work performance) to the total annual working time pool per full-time employee. The full-time status of the worker in the evaluated unit is always reported. If an employee holds more than one type of full-time job within the evaluated unit, the total sum of the two shall be reported.

³ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

⁴ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

⁵ Who participates in the management and support of R&D&I in the institution.

staff involved in teaching activities						
Early career researchers ⁶	1.2/0.6	0.2/0	0.3/0	0.3/0	0/0	2.0/0.6
Total ⁷	112.1/56.3	103.6/49.9	104.2/50.9	103.5/53.2	103.6/51.1	527.0/263.4

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

3.1.2 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2019 (numbers of physical employees and personnel)⁸

Academic/ professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	0	0	1	0	6	2	4	1
Associate Professor	0	0	1	0	8	1	5	2	4	1	1	0
Assistant Professor	0	0	9	2	17	6	4	2	6	3	0	0
Assistant	0	0	1	1	1	1	0	0	0	0	0	0
R&D Personnel ⁹	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁰	0	0	0	0	1	1	1	1	0	0	0	0
Technical and economic staff ¹¹	2	2	10	9	12	8	13	9	10	8	1	0
Scientific, research and development staff involved in teaching activities	0	0	0	0	0	0	0	0	0	0	0	0
Early career researcher ¹²	0	0	2	1	0	0	0	0	0	0	0	0
Total ¹³	2	2	23	13	39	17	24	14	26	14	6	1

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D Personnel, Researchers in other categories and Technical and economic staff are mutually exclusive, i.e. one staff member is reported in only one

⁶ See Definition of Terms in Methodology HEI2025+.

⁷ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

⁸ The total number of employees/workers as of 31st December of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

⁹ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁰ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹¹ Who participates in the management and support of R&D&I in the institution.

¹² See Definition of Terms in Methodology HEI2025+.

¹³ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I Personnel, Researchers in other categories and technical and economic staff.

category. The categories of scientific, research and development staff involved in teaching activities and early career researchers are reported collectively for all the above-mentioned categories.

3.1.3 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2023 (numbers of physical employees and personnel)¹⁴

Academic/ professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	2	0	1	0	3	2	6	0
Associate Professor	0	0	2	1	8	3	8	1	4	2	1	0
Assistant Professor	0	0	5	2	21	9	1	0	6	2	1	0
Assistant	0	0	3	1	1	1	1	1	0	0	0	0
R&D Personnel ¹⁵	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁶	0	0	0	0	0	0	0	0	0	0	0	0
Technical and economic staff ¹⁷	1	0	8	6	10	8	6	6	10	6	5	3
Scientific, research and development staff involved in teaching activities	0	0	0	0	0	0	0	0	0	0	0	0
Early career researcher ¹⁸	0	0	0	0	0	0	0	0	0	0	0	0
Total ¹⁹	1	0	18	10	42	21	17	8	23	12	13	3

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

Table 3.1.4 – Students

Type of study	2019		2020		2021		2022		2023		Total	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Undergraduate	1 629	725	1 875	887	1 718	783	1 471	632	1 533	661	8 226	3 688
Master's ²⁰	1 003	537	991	503	910	437	816	389	802	403	4 522	2 269

¹⁴ The total number of employees/workers as at 31.12. of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

¹⁵ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁶ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹⁷ Who participates in the management and support of R&D&I in the institution.

¹⁸ See Definition of Terms in Methodology HEI2025+.

¹⁹ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

²⁰ All master's degree students are listed, regardless of the length of their programme of study.

Doctoral	55	29	62	29	56	23	54	22	53	29	280	132
Lifelong Learning Courses	14	5	10	0	7	1	17	3	21	2	69	11
Total	2 701	1 296	2 938	1 419	2 691	1 244	2 358	1 046	2 409	1 095		

Table 3.1.5 - Study programmes in Czech/English

Type of study programme	Total ²¹ / Of which professional study programmes											
	2019		2020		2021		2022		2023		Total	
Undergraduate	5 / 1	1 / 0	4 / 1	2 / 1	4 / 1	2 / 1	4 / 1	2 / 1	4 / 1	2 / 1	5 / 1	2 / 1
Master's	4 / 1	0 / 0	5 / 1	0 / 0	4 / 1	0 / 0	4 / 1	0 / 0	4 / 1	0 / 0	5 / 1	0 / 0
Doctoral	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0
Lifelong Learning courses	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1
Total	11 / 4	2 / 2	11 / 4	3 / 2	6 / 4	3 / 2	10 / 4	3 / 2	10 / 4	3 / 2		

Note: For each SP type, enter the number of SPs in Czech language in the first cell and insert the number of SPs in English language after the slash in the same cell (e.g. 15/3), enter the number of professional SPs in Czech language in the second cell and insert the number of professional SPs in English language after the slash. Follow a similar procedure in the last column of the table (Total).

3.1.6 – R&D&I capacities

R&D&I field	FORD	FORD share [%]	Predominant type of research	Total share of industry group [%]
1. Natural Sciences	1.1 Mathematics	5	Basic Research	7
	1.2 Computer and information sciences	2	Basic Research	
	1.3 Physical sciences		Zvolte položku.	
	1.4 Chemical sciences		Zvolte položku.	
	1.5 Earth and related environmental sciences		Zvolte položku.	
	1.6 Biological sciences		Zvolte položku.	
	1.7 Other natural sciences		Zvolte položku.	
2. Engineering and Technology	2.1 Civil engineering		Zvolte položku.	4
	2.2 Electrical engineering, Electronic engineering, Information engineering	2	Balanced basic and applied research	
	2.3 Mechanical engineering		Zvolte položku.	
	2.4 Chemical engineering		Zvolte položku.	
	2.5 Materials engineering		Zvolte položku.	
	2.6 Medical engineering		Zvolte položku.	
	2.7 Environmental engineering	2	Basic Research	
	2.8 Environmental biotechnology		Zvolte položku.	

²¹ The total number of study programmes for which admissions have been announced in a given academic year.

	2.9 Industrial biotechnology		Zvolte položku.	
	2.10 Nanotechnology		Zvolte položku.	
	2.11 Other engineering and technologies		Zvolte položku.	
3. Medical and Health Sciences	3.1 Basic medicine		Zvolte položku.	
	3.2 Clinical medicine		Zvolte položku.	
	3.3 Health sciences		Zvolte položku.	
4. Agricultural and veterinary sciences	4.1 Agriculture, Forestry, and Fisheries		Zvolte položku.	
	4.2 Animal and Dairy science		Zvolte položku.	
	4.3 Veterinary science		Zvolte položku.	
	4.4 Other agricultural sciences		Zvolte položku.	
5. Social Sciences	5.1 Psychology and cognitive sciences		Zvolte položku.	89
	5.2 Economics and Business	84	Balanced basic and applied research	
	5.3 Education		Zvolte položku.	
	5.4 Sociology		Zvolte položku.	
	5.5 Law	5	Balanced basic and applied research	
	5.6 Political science		Zvolte položku.	
	5.7 Social and economic geography		Zvolte položku.	
	5.8 Media and communications		Zvolte položku.	
	5.9 Other social sciences		Zvolte položku.	
6. Humanities and the Arts	6.1 History and Archaeology		Zvolte položku.	
	6.2 Languages and Literature		Zvolte položku.	
	6.3 Philosophy, Ethics and Religion		Zvolte položku.	
	6.4 Arts (arts, history of arts, performing arts, music)		Zvolte položku.	
	6.5 Other Humanities and the Arts		Zvolte položku.	
Total		100 %	-	100 %

RECOGNITION BY THE RESEARCH COMMUNITY

3.2 Recognition by the research community

The evaluated unit will briefly comment on its position in the research community. It shall consider individual and other prestigious R&D&I awards, participation of its academic staff in the editorial boards of international scientific journals, elected membership in professional societies, major invited lectures given by the evaluated unit's academic staff abroad or by foreign scientists and other relevant guests at the evaluated unit. Additionally, it will address the involvement of staff in the evaluation of national or European project/programme calls over the period of 2019–2023 based on the data provided in annex tables 3.2.1 to 3.2.5 (max. 10 most relevant items). If necessary, the evaluated unit shall list any additional services to the scientific community that it considers relevant.

Maximum 1000 words.

Self-assessment:

FBM holds a significant position within the research community through its active engagement in scientific boards of Czech and Slovak universities, doctoral study programme boards, editorial boards of international scientific journals and professional societies. In total, during the reporting period there were 29 instances of participation of academic staff in the editorial boards of international scientific journals, 70 invited lectures of academic staff of the evaluated unit at foreign universities, 95 lectures of foreign scientists and other guests, and 26 elected memberships in scientific societies and networks.

Academics prof. Režňáková, prof. Koráb, doc. Konečná, doc. Pirožek and dr. Kříž were selected for their academic reputation as evaluators of the Czech National Accreditation Bureau for Higher Education. In this role, they provide opinions on the quality of study programmes, the granting of institutional accreditation to universities, and accreditation of habilitation and professorship procedures, thus contributing to the cultivation of the academic environment and the development of the discipline.

FBM academic staff are members of the doctoral study programme boards of Faculty of Economics and Administration, Masaryk University; Faculty of Business and Economics, Mendel University in Brno; Faculty of Management and Economics, Tomas Bata University in Zlín; Faculty of Civil Engineering, BUT. Academic staff regularly evaluate doctoral theses at Czech and foreign universities and also act as evaluators (opponents, committee members) in habilitation and professorship procedures.

FBM academic staff are members of scientific boards of leading Czech and Slovak faculties focused on economics and management, e. g. Faculty of Economics and Administration, University of Pardubice; Faculty of Economics, Technical University of Ostrava; Faculty of Management and Economics, Tomas Bata University in Zlín; Faculty of Economics, University of West Bohemia in Pilsen; Faculty of Military Leadership, University of Defence; Faculty of Social and Economic Studies, University of Jan Evangelista Purkyně in Ústí nad Labem; Institute of Forensic engineering, BUT; University of New York in Prague; Faculty of Business Management, University of Economics in Bratislava.

They also participate in editorial boards of publishing houses, e.g. Key Publishing; and in both scientific and professional international societies, e. g. Polish Economic Society Branch in Toruń, Poland; European Association of Tax Law Professors (EATLP); American Mathematical Society (AMS, USA); Gesellschaft für Angewandte Mathematik und Mechanik (GAMM, Germany); European Association for Theoretical Computer Science (EATCS, Belgium); European Society for Engineering

Education (SEFI, Sweden); The Institute of Electrical and Electronics Engineers (USA); International Society for Professional Innovation Management (ISPIM, Norway); European Financial Planning Association (EFPA), European Academy of Management (EURAM); EBES (Eurasia Business and Economics Society (EBES); European Association of Tax Law Professors (EATLP); Academic Association of Management and Administration (Lithuania); Centre of Sociological Research (Ukraine); International Society for Professional Innovation Management (United Kingdom); Project Management Institute (PMI). Academic doc. Konečná is a member of several scientific networks, i.e. European Institute for Advanced Studies in Management (EIASM), International Management Development Association (IMDA), Task Force Human Resources – CESAER (Conference of European Schools for Advanced Engineering Education and Research), and she also participates in international non-profit organisation European Platform of Women Scientists (EPWS). Academic doc. Pavláková Dočekalová is also an active member of CESAER – Task Force Sustainability. Another academic active in the network CESAER is doc. Šimberová, who is also involved in the international university networks Prime Networking, The New Initiatives and Challenges in Europe (NICE), Baltic Management Development Association (BMDA) and Global Network – European Foundation for Management Development (EFMD). She also cooperates with the Ministry of Education and Science of Latvia as an expert for the evaluation of higher education and study programs in the field of Economics and Management.

The most significant recognition of scientific work in the monitored period was the [Fulbright scholarship](#) for assoc. prof. Vít Chlebovský, who conducted [research on entrepreneurship promotion at universities in the USA at Case Western Reserve University in Cleveland](#).

The quality of the scientific work of FBM academics was recognised by an [international award granted by the Polish Economic Society](#) in the case of joint international research of prof. Marek Zinecker (FBM) and dr. hab. Maciej Ryczkowski (Nicolaus Copernicus University in Toruń) in the area of the relationship between money supply, credit and stock price dynamics. The committee selected their paper from peer-reviewed scientific publications published between 2020 and 2023 in the fields of economics, finance and management.

Prof. Vladimír Smejkal received the [Václav Mandák Award](#) from the legal community for his scientific article on the factual and legal nature of making information websites inaccessible for reasons of spreading misinformation. The prize is awarded once a year by the Czech Bar Association. Prof. Smejkal's article best met all the criteria, i.e. in terms of professional quality, clarity and persuasiveness of argumentation, originality of the topic and topicality, and practice.

The Czech Society for Quality awarded [the prize for the best dissertation in the field of social responsibility](#) and sustainable development to Jan Slavík in 2023.

In addition to the metrics listed in Tables 3.2.1 to 3.2.5, recognition by the scientific community is measured by the publication and citation profile of the institution. During the monitoring period, FBM increased the number of articles published in peer-reviewed high-impact journals by 67.8% compared to the previous monitoring period (2014–2018), while the proportion of articles in prestigious Q1 and Q2 journals increased from 48.15% to 57.52%. Publications from the period 2019–2023 have already accumulated 867 citations (845 without self-citations), marking a 63.67 % increase from the 315 citations collected during the previous monitoring period (2014–2018).

Table 3.2.1 - Prestigious R&D&I awards granted during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the award	Awarding institution
doc. Ing. Vít Chlebovský, Ph.D.	Fulbright Scholarship	Fulbright Commission
doc. Ing. Petr Pírožek, Ph.D.	MUNI Scientist Award 2020	Masaryk University
prof. Ing. Marek Zinecker, Ph.D.	Best Scientific Publications Competition for Members of the Polish Economic Society	The Polish Economic Society
prof. Ing. Vladimír Smejkal, CSc., LL.M., DrSc.	Václav Mandák Award for the best scientific article	The Czech Bar Association
Ing. Jan Slavík, Ph.D.	František Egermayer Prize	The Czech Society for Quality

Note: Provide up to 10 examples.

Table 3.2.2 Participation of academic staff of the evaluated unit in editorial boards of international scientific journals during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of scientific journal, ISSN
prof. Ing. Alena Kocmanová, Ph.D.	MANEKO (Manažment a ekonomika podniku), ISSN 1337-9488 Creative and Knowledge Society, ISSN: 1338-4465 Oeconomia Copernicana, ISSN 2083-1277
prof. Ing. Vojtěch Koráb, Dr., MBA	TIBE (Transformation in Business and Economics), ISSN 1648-4460
prof. Ing. Tomáš Meluzín, Ph.D.	Oeconomia Copernicana, ISSN 2083-1277 Equilibrium. Quarterly Journal of Economics and Economic Policy, ISSN 1689-765X Cement Wapno Beton, ISSN 1425-8129 Catalaxy, ISSN 2544-090X Tarnow Scholarly Dialogues, ISSN 2545-3718 Acta Universitatis Nicolai Copernici – Management, ISSN 1689-8966
prof. Ing. Marek Zinecker, Ph.D.	Oeconomia Copernicana, ISSN 2083-1277 Equilibrium. Quarterly Journal of Economics and Economic Policy, ISSN 1689-765X Acta Universitatis Nicolai Copernici – Zarządzanie, ISSN 1689-8966
prof. Ing. Petr Dostál, CSc.	Soft Computing, ISSN 1433-7479
prof. RNDr. Ivan Mezník CSc.	Caucasus International University Herald, ISSN 1987-863 X Journal of the Nepal Mathematical Society, ISSN 2616-0161
Ing. František Milichovský, Ph.D., MBA	Journal of valuation and expertness, ISSN 2533-6258 Scientia & Societas, ISSN 1801-6057
prof. Ing. et Ing. Stanislav Škapa, Ph.D.	Oeconomia Copernicana, ISSN 2083-1277 Acta Universitatis Nicolai Copernici – Zarządzanie, ISSN 1689-8966
doc. PhDr. Iveta Šimberová, Ph.D.	Business, Management and Education, ISSN 2029-7491 Engineering Economics, ISSN 1392-2785 International Business and Global Economy, ISSN 2300-6102 Journal of Business Models, ISSN 2246-2465 Oeconomia Copernica, ISSN 2083-1277
doc. Ing. Ondřej Žížlavský, Ph.D.	Journal of Economic & Financial Studies, ISSN 2379-9463 Independent Journal of Management and Production, ISSN 2236-269X

Note: Please provide up to 10 examples of academic staff participation in editorial boards of international scientific journals (e.g. editor, editorial board member, etc.).

Table 3.2.3 The most important invited lectures delivered by the academic staff of the evaluated unit at foreign institutions during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Invited lecture title	Name of host institution, or name of conference or event	Year
doc. Ing. Vit Chlebovský, Ph.D.	Reflection of the University Entrepreneurship Ecosystem Research Beyond Silicon Valley – Innovation and Entrepreneurial Ecosystem of South Moravia region	Case Western Reserve University, USA	2023
prof. Ing. Marek Zinecker, Ph.D.	Instruments of Trade Policy – Tariffs, Subsidies, Gains and Costs	Gdansk University of Technology, Poland	2023
Ing. David Schüller, Ph.D.	Application of the Quality Function Deployment Method in Digital Marketing Application of Metrics for Evaluating Digital Marketing Effectiveness	University of Lille, France	2023
prof. Ing. Petr Dostál, CSc.	Applied Science in Marketing and Management	University of Applied Sciences Leiden, Netherlands	2023
Ing. et Ing. Zuzana Janková, Ph.D.	Machine Learning in Marketing	University of Applied Sciences Leiden, Netherlands	2023
doc. Ing. Radek Doskočil, Ph.D., MSc	Actual Challenges in Project Management Fuzzy Modelling in Project Management	Haldia Institute of Technology, West Bengal, India	2022
Ing. Lenka Širáňová, Ph.D.	Project Planning	University of Girona, Spain	2022
doc. Ing. Zdeňka Konečná, Ph.D.	Startup Show Case Project	Bielefeld University of Applied Sciences, Germany	2021
doc. Ing. Zdeňka Konečná, Ph.D.	Neuromarketing	Seattle University, USA	2021
Ing. Lenka Širáňová, Ph.D.	Importance of Project Management Project Management Experience in the Czech Republic	University of Málaga, Spain	2019

Note: Provide up to 10 examples.

Table 3.2.4 - The most important lectures by foreign scientists and other guests relevant to R&D&I at the evaluated unit during the evaluation period

Name, surname and title(s) of the lecturer	Lecturer's employer at the time of the lecture	Invited lecture title	Year
Tiffany Cashon, MBA	Case Western Reserve University, USA	Comparison of the Innovation and Entrepreneurship Ecosystems of the North-East Ohio and South Moravia regions	2023
Prof. Dr. Valliappan Raju	Perdana University, Malaysia	The Process and Fundamentals of Research Methodology	2023
Dr. Moti Zwilling	Ariel University, Israel	Cyber Security	2023
Prof. Dr. Irada Dzhalladova	Kyiv National Economic University, Ukraine	Some economic applications of differential equations	2022
Dr. Mariella C. Remund	City University of Seattle, USA	Neuromarketing	2021

Dr. Yee van Fan	University of Oxford, UK	Social Pillar for Sustainable Business Development. Environmental Issues Solved for Sustainable Business Development.	2022 2021
Dr. Alex Streenstra	Northern Arizona University, USA	Management for Environmental Sustainability and Durable Competitive Advantage	2020
Dr. Abdoulmohammad Gholamzadeh Chofreh	Birmingham City University, UK	Intercultural Adaptation, Acculturation, Culture Shock and Mechanism of its Successful Management Classical Models developed by Geert Hofstede, Fons Trompenaars and Hampden Turner Training for Expatriates Negotiation in an International Environment Specifics of Selected Countries with focus on International Trade Employee Motivational Interviews	2023 2022 2021 2021 2020 2020
Dr. Ramani Gallellalage	Nottingham Trent University, UK	Qualitative Research Method in Developing Women-owned Business	2019
doc. RNDr. Mária Bohdalová, PhD.	Comenius University in Bratislava, Slovakia	Multiple Regression Model in Management	2019

Note: Provide up to 10 examples.

Table 3.2.5 - Involvement in the evaluation of national/European research project/programme calls relevant to the R&D&I area at the unit during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the research project/programme call	Name of the contracting authority/guarantor of the project/programme call	Year
doc. RNDr. Bedřich Půža, CSc.	Evaluation of the Doctoral study program Mathematics (Ph.D. in Mathematics)	Akaki Tsereteli State University, Kutaisi, Georgia	

Note: Provide up to 10 examples.

RESEARCH PROJECTS

3.3 Research projects

The evaluated unit shall list at most 10 (considered most significant by the evaluated unit) research projects/activities (regardless of whether they are supported by public funds or based on contract research²²) that it has implemented or participated in during the period of 2019–2023²³. This should be done from the full list in annex tables (Table 3.3.1-3.3.2)²⁴, regarding particularly the results achieved or the application potential of the projects. The unit should also describe how the research projects contributed to the mission and purpose of the evaluated unit. If the evaluated unit has been a participant in listed project, it shall indicate which other entities were involved and describe its contribution to the project. The interdisciplinary aspects of the projects will also be commented on, along with any collaboration with other units of the evaluated HEI.

Maximum 300 words per project.

Self-assessment:

The high level of social relevance of the research topics and the high erudition of the academic staff is reflected by the fact that FBM is very active and successful in research projects. In the monitored period, 26 research projects were solved at the FBM. For comparison, in the previous monitored period (2014-2018), 20 research projects were addressed. The examples of projects implemented were selected to represent both international and national projects focused mostly on applied research.

1) Research on University Entrepreneurial Ecosystems – Comparison of U.S. and European Best Practices and Implications to Newly Built Ecosystems; US Fulbright Masaryk Program, 8/2023 – 12/2023; USD 14,000; <https://fulbright.gov.cz/wp-content/uploads/2023/09/booklet-web.pdf>

Qualitative research on the leading U.S. University Entrepreneurship Centers (EC) and entire Entrepreneurial Ecosystems in the form of research case studies, that were created through a combination of in-depth structured and semi-structured interviews, non-participatory and participatory observations, focus groups, and thematic workshops. The outcome is a set of best practices including the structure of successful programs offered by EC, organization of EC within the university structure, possible ways of EC funding, major aspects for EC sustainability, metrics and measures of EC success and society impact, and others. These outcomes are being compared to the author's own experience with leading European University EC platforms (in Scandinavia, Switzerland, Germany) and also to the actual status at the Brno University of Technology. Finally, recommendations for further EC development have been formulated. These recommendations are useful not only for the author's home university but for any EC in a similar phase of development.

This research is fully in line with the mission and goals in research and knowledge transfer. As an integral part of the Brno University of Technology, FBM plays an important role contributing valuable expertise in the commercialization of research outcomes and fostering innovation and entrepreneurship across the university. This expertise is transferred to other faculties through various programs and activities of the ContriBUTE Innovative and Entrepreneurial Ecosystem and through supporting related knowledge transfer initiatives.

²² For the definition of contract research for the purposes of evaluation in the HE segments, see Article 2.2.1 of the Community Framework for State Aid for Research, Development and Innovation 2014/C 198/01.

²³ Regardless of whether the projects are completed or still ongoing, provided that at least part of the project was implemented during the evaluation period.

²⁴ The evaluated unit shall only fill tables that are relevant to it.

Besides the knowledge transfer internally within BUT, the research outcomes dissemination goes in several parallel ways – by a series of workshops organized for the colleagues at U.S. universities (CWRU, UC Berkeley, Stanford University), by a series of workshops organized within the platform University for Entrepreneurship (Univerzita pro podnikavost), where Czech universities are sharing the experience with programs and activities of entrepreneurial support and where the Brno University of Technology plays the leading role. For more information see: <https://www.vut.cz/en/rad/projects/detail/36104>

2) Family Businesses: Value Drivers and value Determination in the Process of Succession; Technology Agency of the Czech Republic, 1/2019 – 2/2022; TL02000434; EUR 281,420; <https://starfos.tacr.cz/en/projekty/TL02000434?query=wwwcyaac6yyga>

This project was focused on research on the valuation of family businesses, for which a special valuation procedure that would capture the family aspects of doing business was missing, as the traditional approaches were unable to capture the aspects of emotional wealth. The aim was to develop a methodology for valuating family businesses while incorporating family-specific factors. Considering non-financial family-related aspects in the valuation process made the project unique. The initial step of the research was estimating the cost of equity for family businesses using the CAPM approach. To capture the country specifics, instead of using market betas from US firms, as is traditional, the project presented its own estimates based on Czech accounting data. The accounting betas are considered a valid approximation of market betas, while in this case, the country specifics are fully captured. The next step was capturing the family business specifics and transforming them into numerical values, creating the so-called family score. Based on confirmatory factor analysis, the resulting family score was regressed against traditional value drivers. In this way, the non-financial aspects were reflected in the value drivers' estimates and the valuation itself. The final step was to create a practically utilizable web tool that, by using the user's input data (financial and non-financial), will deliver the estimate of the business. Although the model is based on data from Czech family businesses, it is transferable to other economies with similar family business characteristics.

The project successfully achieved its goals, resulting in multiple publications, a certified methodology, and a [web application for business valuation](#) (in Czech). (Link to project outputs: <https://www.vut.cz/vav/projekty/detail/30139>).

3) Digital Transformation for Business Model Innovations in Small and Medium Sized Enterprises in the Czech Republic; Technology Agency of the Czech Republic, 2/2019 – 12/2022; TL02000215; EUR 196,331; <https://starfos.tacr.cz/en/projekty/TL02000215?query=7n5iaadcviha>. The result of the research is e.g. certified methodology - Methodology of Digital Transformation for Innovation of Business Models of Enterprises (recognized by the Ministry of Industry and Trade of the Czech Republic, no. MPO 90256/22/61400, dated 5 September 2022). The project aligns with our faculty's mission by addressing the latest theoretical and practical solutions needed by regional economies. The application of the methodology was a necessary condition for obtaining a subsidy to support digital transformation provided by the Ministry of Industry and Trade of the Czech Republic. The methodology has so far been applied to more than 1000 companies. The certified methodology for assessing the level of digital maturity of small and medium-sized enterprises in the Czech Republic and the platform for identifying opportunities for business model transformations enables enterprises to: assess their level of digital maturity, increase innovation activity, generate sustainable value for customers, apply scenarios for implementing digital transformation in business models, increase business performance, accelerate the learning process and competence development in the field of

business model development and digital transformation. (Link to project outputs: <https://www.digitalnipodnik.cz/vystupy-projektu>)

4) Determinants of Relationships between Wholesale and Retail Energy Prices; Technology Agency of the Czech Republic, 2/2023 – 7/2024; TK05010088; EUR 244,220;

<https://starfos.tacr.cz/en/projekty/TK05010088?query=67qqaadh6tla>

The project, which focused on the ongoing energy crisis since 2021, aimed to provide a solution to the rising energy prices and the negative impact on the market due to the termination of large suppliers. From the market regulator's perspective, no known tools would allow this situation to be predicted. The methodology described in this project involves various procedures that allow changes to be predicted in the retail market. The solution was also supplemented by measuring the intensity of economic competition and describing procedures for predicting the collapse of electricity suppliers. The project was solved in cooperation with the Faculty of Electrical Engineering and Communication (FEEC), since the solution is complex and has both economic and technical aspects. Electricity is not a homogeneous product; from a technical point of view, separation is necessary from the point of view of customer groups, these groups then have precise technical consumption parameters. However, from a comprehensive point of view, the market cannot be solved in isolation. Therefore, it is necessary to create a model customer, capturing different requirements for consumption performance and time differentiation of prices. The solution also required a partial software application, where experience with software support is on the side of FEEC. The project solution is in line with the faculty's strategy, where the economic side of the problem is always a complement to more complex technical problems that other parts of BUT deal with. The market regulator - the Energy Regulatory Office of the Czech Republic will use the methodology mentioned to predict and manage market changes, while the procedures and database obtained will be used to solve other projects which are focused on the energy market. Specifically renewable energy sources, the society has been pursuing for a long time. This source type will emphasize the economic side of production because producers will thus become elementary units for which economic efficiency is an important factor.

5) Transfer Pricing in V4 Countries; International Visegrad Fund, 2/2019-4/2020; participants from the Czech Republic, Slovakia, Poland and Hungary; Project ID 21830038; EUR 6,071; <https://www.transferpricing-v4.net/>

The aim of the project was to conduct a critical comparative study of transfer pricing legislation in the V4 countries. The results are presented in the main output of the project: a comprehensive, unique and freely available collective monograph based on the scientific cooperation between the Brno University of Technology, Faculty of Business and Management (Czech Republic), DUMA - Dunamenti Adósklaszter (Hungary), Széchenyi István University, Kautz Gyula Faculty of Economics (Hungary), University of Economics in Katowice, College of Finance (Poland), and Matej Bel University in Banská Bystrica, Faculty of Economics (Slovakia). Academic staff of FBM doc. Brychta was the principal investigator of the project.

The monograph is freely available (under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License; available from DOI: 10.13164/9788021458734) and has more than 2,700 views and 342 reads on www.researchgate.net.

The project supports the faculty's mission by advancing knowledge on responsible tax practices and providing educational resources to improve the understanding of complex financial regulations. The project and its results contributed to the dissemination of knowledge and existing problems in transfer pricing issues in the V4 countries, as well as policy implications for transfer pricing regulation and de lege ferenda proposals, while identifying existing risks and shortcomings in the legal regulation of transfer pricing. The project has involved academics, consulting firms (tax advisors) and

representatives of tax administrations, and the results have been disseminated among them – so there is an impact in this respect (increasing the knowledge and competence of academics, tax advisors and also tax administrations). The results can also be used in the educational process (mainly in courses focusing on more complex issues). The project and its results can be (and in our case became) the background for a subsequent project (in this case on transfer pricing of financial transactions). (Link to project outputs: <https://www.transferpricing-v4.net/results>).

6) Setting the Market Price for the Financial Transactions while Using the Arm's Length Principle; Technology Agency of the Czech Republic, 6/2021 – 12/2023; TL05000328; EUR 136,173; <https://starfos.tacr.cz/projekty/TL05000328?query=xciyaadjbmka>

The objective of this project was to develop a methodological framework for transfer pricing in financial transactions, focusing on the most common ones: i.e. loans, guarantees, and cash-pooling. The application problem is that the flagship standard, the OECD Transfer Pricing Guidelines, which includes chap. X for financial transactions, is undoubtedly a useful but still very general guide. The project and its results provide more specific guidance and tools for the pricing of financial transactions - it should increase legal certainty for both taxpayers and tax administrations. The external guarantor of the application is the General Financial Directorate (GFD), which is the methodological body of the Financial Administration of the Czech Republic. The developed results should be reflected in the internal guidelines of the GFD in the next 2 years, with the proviso that these materials will be made public and will create a so-called binding administrative practice: thus eliminating legal uncertainty and reducing costs for both taxpayers and the financial administration.

The project aligns with the faculty's mission by developing practical solutions to improve the legal and financial certainty of transfer pricing in financial transactions. By collaborating with the GFD and addressing the specific needs of small and medium-sized enterprises (SMEs), the project directly contributes to the faculty's goal of fostering global and regional economic development through scientifically-backed, socially responsible solutions. Its outcomes not only advance financial management but also support the faculty's vision of providing research that enhances business practices and improves policy frameworks (link to project outputs: <https://www.vut.cz/en/rad/projects/detail/32448>). The measures will primarily target the SME category. There is also a social benefit in reducing the risk of tax disputes by eliminating uncertainty.

7) Financial Valuation of the Company's Brand (contract research, 1/2023 – 6/2023; EUR 5,917)

The main objective of this contract research project was to determine the financial value of marketing and customer-orientated assets intended primarily for the internal purposes of the contracting company (hereinafter referred to as the Company). From the methodological point of view, the valuation is based on the concepts of fair value and going concern. The valuation took into account all the information and facts available and considered relevant by the contractor. Of particular importance in determining the resulting valuation are the assumptions about the future sales of the Company, the level of its share of own distribution in total sales, the development of risk-free rates and risk premiums, and the assumption that the company's current business activities and commercial policy will be maintained. Strategic and financial analysis tools were applied to compare the Company with a group of firms operating in a similar or overlapping market. The main conclusion is that the Company's market position is strong enough to assume an indefinite horizon (going-concern concept). The Company has achieved consistently positive operating margins on sales, has been successful in maintaining its market position and strengthening its future potential through significant fixed asset investments, and reducing its relative reliance on external resources. In relation to the customer

portfolio, geographic diversification is increasing. The project aligns with our mission by offering practical solutions for business sphere and fostering cooperation with enterprises.

8) Innovation Scorecard: Management Control Framework of Innovation Projects in IT Industry; Technology Agency of the Czech Republic, 1/2019 – 12/2021; TL02000007; EUR 234871; <https://starfos.tacr.cz/projekty/TL02000007?query=wnbiaadpo6ea>

The project's main objective was to transfer the output of basic research to practical application. Specifically, it concerns the implementation of the innovation controlling framework - Innovation Scorecard, which was designed within the project supported by the Technology Agency of the Czech Republic (GP13-20123P: A Systematic Approach to Assessing the Performance of the Innovation Process for Czech SMEs), in which the main researcher was doc. Žižlavský from FBM. The target group consisted of IT companies, which have experienced a boom in the South Moravian Region in recent years. The project aligns with our mission by offering practical solutions for regional and global economies, and enhancing students' skills in innovation management. The project's outputs include a certified methodology and a professional monograph published internationally, contributing to our faculty's national and international standing: *Innovation Scorecard: A Method to Measure Innovation in Agile Projects and Business Environments*. Management for Professionals. Springer, 2021. 211 p. ISBN: 978-3-030-82687-1. Available at: <https://link.springer.com/book/10.1007/978-3-030-82688-8>. Co-authored by international expert Dr Eddie Fisher, who contributed to the project and its outputs (link to project outputs: <https://www.iscorecard.org/results>).

9) Modelling and Simulation of Sustainable Investment Decision-making; Czech Science Foundation, 1/2017 – 12/2019); GA17-23448S; EUR 83,786; <https://starfos.tacr.cz/en/projekty/GA17-23448S?query=5srqaads2zpg>

The aim of the project was to design a model of sustainable investment taking into account ESG factors in selected sectors, implement and validate this model for the assessment of sustainable investment in the Czech Republic, including the development of a methodological manual and software for investors. Furthermore, to implement and validate it using advanced mathematical, statistical methods and ICT. The project methodology was based on modelling with the inclusion of ESG factors, risk and return to effectively select sustainable investment options. The project aligns with the faculty's mission by developing innovative tools that promote sustainable and responsible investment practices, incorporating ESG factors to support informed decision-making. The output of the project is a software application to support sustainable investment, and a number of publications in journals indexed in Web of Science and Scopus databases (link to project outputs: <https://www.vut.cz/en/rad/projects/detail/28436>). Academics from FBM were the principal investigators and were responsible for the design of the model. The software was developed by colleagues from Mendel University in Brno.

10) Distributed Sensor System for Critical Infrastructure Surveillance; Ministry of the Interior of the Czech Republic, 1/2023 – 12/2025), VK01030213; EUR 745,207; <https://starfos.tacr.cz/en/projekty/VK01030213?query=5mhiaadpbepq>

The project deals with a distributed fibre optic sensor system for the protection of critical infrastructure elements of various scales, performing detection, localisation, identification and real-time tracking of incidents in the monitored zone. The system continuously monitors the secured areas and, in the event of detection and identification of a breach, assesses the level of threat to the critical infrastructure. The system's benefits include increased infrastructure resilience, early threat detection, and economic savings through rapid response and damage minimization. Through such

initiatives, in line with FBM's mission, we advance knowledge and develop innovative solutions that benefit the business sphere and society.

Once completed, we expect this project to have several key benefits for business:

- Increased resilience of critical infrastructures.
- Early detection and identification of incidents will enable rapid response and minimisation of damage to property, human life and the environment. This can lead to economic savings associated with restoration and remediation.
- Increased protection efficiency - the distributed sensor system will enable continuous monitoring and evaluation of the critical infrastructure without the need for the physical presence of human resources on site.
- Early detection and identification of threats will prevent adverse consequences in the event of a successful attack or incident. This can reduce the losses and costs associated with restoring and repairing damaged infrastructures.

Table 3.3.1 Projects supported by public funds

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
GACR – Czech Science Foundation		380/14990	-	-	-	-
TA CR – Technology Agency of Czech Republic		2838/111941	2909/114748	3761/148348	2468/97349	2836/111856
MI - The Ministry of the Interior		3491/137707	3810/150315	435/17177	-	3436/135535
MFA – The Ministry of Foreign Affairs (International Visegrad Fund)		62/2464	86/3379	-	-	-
EU		99/3899	5/211	251/9918	2325/91717	3719/146696
Total		6870/271001	6810/268653	4447/175443	4793/189066	991/394087
In the role of another participant						
Provider ²⁷	Project name	Support (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
TA CR – Technology Agency of Czech Republic		748/29493	598/23587	107/4233	-	-
Total		748/29493	598/23587	107/4233	-	-

²⁵ If the provider is from abroad, please indicate the provider's country of origin in brackets. For the determination of the country of origin of the provider, the place of residence of the provider is decisive.

²⁶ Indicate the total amount expressed in thousands of CZK and the conversion of the total amount into Euro.

²⁷ Ibid.

Table 3.3.2 - Contract research activities

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
LERAM building s.r.o.	Trends in the development of the real estate market and development projects in the Czech Republic	100/3945	0	0	0	0
Československá obchodní banka, a.s.	The potential of the banking and insurance sector in the development of foreign trade for innovative small and medium-sized enterprises	75/2959	0	0	0	0
VITOM reality a finance v.o.s.	Creation of a computer program (graphic work) as specified by the Customer	398/15700	0	0	0	0
BDG invest s.r.o.	Prediction of the development of development projects in the Czech Republic in the context of the current economic crisis	0	100/3945	0	0	0
Eaton Elektrotechnika s.r.o.	Analysis of theoretical knowledge in the field of mathematical methods of signal analysis	0	0	250/6338	0	0
Eaton Elektrotechnika s.r.o.	Analysis of the knowledge base in the field of mathematical and statistical methods of signal processing	0	0	195/4943	0	0
Vodovody a kanalizace Jablonné nad Orlicí, a.s.	Analysis of the methodology for introducing compliance with Decree on Cyber Security into the organization	0	0	0	100/2535	0
Ing. Vlastimil Svoboda	Data Center revitalization methodology	0	0	0	150/3802	0
CODYA Investiční společnost	Modern information technology in decision-making processes	0	0	0	0	100/2535
Fermat CZ, s.r.o.	Financial valuation of the brand in terms of the selected company	0	0	0	0	150/3802
Oblastní nemocnice Příbram	Development of a database of optical and metallic routes and plans	0	0	0	0	120/3042
Vodovody a kanalizace Náchod, a.s.	Analysis of the methodology for introducing compliance with VKB (Decree on cyber security) into the organization	0	0	0	0	120/3042
Total		573/22604	100/3945	445/11281	250/6338	490/12421

Note: List and describe contract research activities with a revenue in a given calendar year, regardless of the amount of financial revenue.

²⁸ If the client is from abroad, indicate in brackets the country of origin of the client.

3.4 Research results with existing or prospective impact on society

The evaluated unit shall briefly comment on a maximum of 10 (considered most significant by the evaluated unit) research results already applied or realistically heading towards application during the period of 2019–2023, based on the overview annex table 3.4.1 (it is recommended to indicate results with a link to projects listed in indicator 3.3). The evaluated unit must demonstrate in its description that the research results have led or will soon lead to positive impacts²⁹, on society (e.g. description of how the results are used by various users, the range of persons/institutions for which the result is relevant, measurable economic impacts, etc.). The evaluated entity shall indicate in its commentary whether the gender dimension is considered in these results and discuss the impacts of the results regarding sustainability.

Maximum range 300 words/result.

Self-assessment:

We demonstrate the social and economic impact of the FBM through the results listed below.

- 1) M. Režňáková; M. Karas; P. Srbová; J. Pěta; K. Brychta: "Metodika určování hodnoty rodinných podniků v procesu nástupnictví, (Methodology for determining the value of family businesses in the succession process)," (in Czech), Methodology certified by the authorised body, <https://hodnotapodniku.fbm.vutbr.cz/>

The certified methodology is supported by a web application allowing the calculation of the value of family businesses. Both the methodology and the web application are freely available to users (the authors committed to this when the project was designed).

The commonly used valuation approach failed to capture family business specifics. This methodology is based on the knowledge obtained from the analysis of data of small and medium-sized family businesses in the Czech Republic. No similar methodology has been developed in the Czech Republic or internationally. The methodology has implications for: family business owners, investors, policymakers, and academics. By addressing the specific needs and challenges of family-owned enterprises, it contributes to their sustainability, growth, and positive impact on the broader economy and society.

Family businesses play a crucial role in many economies, and ensuring successful succession is essential for their continuity. The methodology developed through this research helps family business owners understand the value of their businesses, facilitating smooth transitions to the next generation or new owners. This methodology can also help policymakers understand the unique challenges faced by family-owned enterprises and design targeted initiatives to encourage their growth and sustainability.

The methodology offers a structured approach to determine the value of family businesses, incorporating factors specific to the family context. Accurate valuation is crucial for informed decision-making during mergers, acquisitions, or generational transfers. Family business owners, armed with a better understanding of their business's value, can make more strategic decisions regarding growth, expansion, and financing. This informed decision-making can lead to increased competitiveness, sustainable growth, and enhanced profitability. The methodology contributes to the sustainability of family businesses as smooth succession process can ensure the continuity of family businesses. Also, these companies are often deeply rooted in local communities, their continuity translates into job security and economic stability for the regions in which they operate. The methodology considers the gender equality and diversity in leadership roles within family-owned enterprises.

²⁹ See Terms definition.

- 2) I. Šimberová; R. Zich; V. Chlebovský; D. Schuller; L. Kaňovská; L. Širáňová; F. Milichovský; J. Váchal; J. Straková; M. Mareš; M. Frelich; P. Břečková; A. Kocmanová; “Metodika Digitální transformace pro inovace obchodních modelů podniků (Digital Transformation Methodology for Business Model Innovation)”, (in Czech), Methodology certified by the authorised body, <https://www.digitalnipodnik.cz/vystupy-projektu/metodika>.

This certified methodology contributes to the actual digital transformation of the entire economy. It provides a framework for SMEs to go through digital transformation and innovate their business models, enabling them to adapt to the digital era and leverage new opportunities for growth and competitiveness. The impact and benefits of this methodology include assisting businesses in navigating the complexities of digital transformation, facilitating the identification and implementation of innovative business models, and supporting the overall digital maturity and success of SMEs not only in the Czech Republic. By providing SMEs with a structured methodology for evaluating their digital readiness, it empowers these businesses to actively engage in their own digital transformation journey. SMEs can use the methodology to gain a better understanding of the significance of digital transformation for innovating their business models and improving their competitive position, not only domestically but also in the international market. As digitalization becomes increasingly crucial for business competitiveness and sustainability, proposed methodology helps SMEs overcome barriers and seize opportunities arising from digital advancements. The economic impact is substantial, especially for SMEs that form a significant portion of the Czech Republic's business landscape. By adopting the methodology, SMEs can assess their digital maturity and identify areas for improvement. This self-awareness facilitates better resource allocation, leading to increased operational efficiency and cost-effectiveness. Research findings indicate that companies with innovative business models experience higher revenues and profitability, contributing to their long-term sustainability. Furthermore, the project's methodology supports the development of competencies in digital transformation, which strengthens SMEs' overall innovation capacity. As SMEs become more digitally mature, they are better equipped to navigate challenges, capitalize on emerging market trends, and attract new customers. The methodology does not explicitly address the gender dimension.

- 3) O. Žižlavský; E. Fisher: “iScorecard Methodology; Innovation Scorecard,” (in English), Methodology certified by the authorised body, <https://www.iscorecard.org/>

The Innovation Scorecard is a methodology designed to assess and guide innovation initiatives within IT organizations. It combines both quantitative and qualitative methods, integrating financial and non-financial metrics to evaluate innovation performance. The Innovation Scorecard can drive positive change within organizations, promoting innovation, efficiency, and a culture of continuous improvement. Its systematic approach to innovation can lead to tangible economic benefits and improved competitiveness in the market. The introduction of the Innovation Scorecard fosters a culture of innovation within organizations. The process also promotes effective communication and collaboration among team members and stakeholders, fostering a more cohesive and interconnected work environment. Furthermore, the Innovation Scorecard supports learning and knowledge management. Through its stage-gate system, lessons learned from each stage are documented, enabling future projects to benefit from previous experiences and avoid repeating mistakes. This leads to continuous learning and improvement within the organization. The qualitative research approach of the Innovation Scorecard acknowledges the socially constructed nature of the business environment. This recognition helps align the innovation process with the prevailing cultural differences, making it more effective and relevant in the local context. The Innovation Scorecard's balanced approach to measuring performance allows organizations to make well-informed strategic

decisions. As the implementation of the methodology leads to improved organizational alignment and streamlining of processes, staff productivity levels are likely to increase. Focus on effective goal setting and measurement helps organizations maximize their return on investment by setting realistic and ambitious targets. Through the stage-gate system, the Innovation Scorecard ensures that resources are allocated optimally to projects. Innovations are key to sustainable development. The Innovation Scorecard promotes a systematic approach to innovation, which can lead to the development of new and sustainable products and services. By encouraging employees of all genders to generate and implement creative ideas, the Innovation Scorecard Methodology fosters a more dynamic and innovative workplace, ensuring diverse perspectives and promoting gender equality.

- 4) O. Žižlavský; E. Fisher: *Innovation Scorecard: A Method to Measure Innovation in Agile Projects and Business Environments*. Springer, 2021. 211 p. ISBN: 978-3-030-82687-1.

The book provides a comprehensive summary of the knowledge, findings and experience derived from the practical application of the recently developed and implemented Innovation Scorecard methodology. The book presents the Innovation Scorecard methodology, supported by the best practice case studies from the implementation of the methodology on three different projects at the Red Hat (two of which were conducted in an agile software development environment and one in a project-driven IT infrastructure change environment). Additionally, it provides Innovation Scorecard tool templates. The Innovation Scorecard methodology presents a unique process for evaluating innovation, from a simple and user-friendly process to the application of recommended performance metrics and how to apply them in any enterprise environment. This contributes to better monitoring and informed decision-making in the management of innovation projects, which has an undeniable positive impact on increasing economy and efficiency. The Innovation Scorecard application at Red Hat shows that it promotes teamwork, independent thinking and ingenuity in innovation on the one hand, but also stops unviable projects. As indicated in the description of the methodology, the Innovation Scorecard fosters a more dynamic and innovative workplace.

- 5) M. Režňáková; S. Štefánková: New Indicators of Innovation Activity in Economic Growth Models. *Journal of Competitiveness*, 2022, vol. 14, no. 3, pp. 153-172. <https://doi.org/10.7441/joc.2022.03.09>

The authors analysed the link between innovations and economic growth. Inspired by many studies in this field and their varying results, they focused on patents and their suitability as innovation proxy in economic growth models. Innovation was proxied by the number of patent applications, which they supplemented with indexes measuring the origin of knowledge and its transfer. The authors created three indexes: the General Propensity to Patent (which combines the level of the legal protection of property right, the efficiency of R&D expenditures, and preferences for patenting in the country); Foreign Knowledge Inflow (which suggests the technological self-sufficiency of the country), and Domestic Knowledge Outflow (which illustrates the extent to which residents export their inventions abroad) to identify the differential impact of innovation on a country's economic growth. Their construction preserves the advantages of data accessibility and aims for better comparability at the country level. The indexes, unlike prior innovation indicators based on patent data, do not focus on the innovation itself but extract information from the patent system about knowledge creation and flow. Implementation of indexes revealed the counteracting impact of patenting on economic growth when the positive effect of innovation creation is weakened by knowledge disclosure. The authors provide evidence that a low propensity to patent facilitates growth. The impact of foreign knowledge on an economy is dependent on its technological capacity. The infusion of foreign knowledge boosts the growth of fast-growing economies but inhibits the growth of less technologically sophisticated

ones. The results of this study could be particularly useful for policymakers, economists, and innovation strategists. By understanding the nuanced impact of patenting and knowledge flows on economic growth, they can better tailor policies to foster innovation and economic development. The study does not explicitly address the gender dimension.

- 6) M. Karas; M. Režňáková: The role of financial constraint factors in predicting SME default. *Equilibrium*, 2021, vol. 16, no. 4, pp. 859-883. <https://doi.org/10.24136/eq.2021.032>

As a part of solving TA CR grant project, the team of doc. Karas and prof. Režňáková came up with a novel approach for estimating debt capacity. The debt capacity represents maximum borrowing capacity, that are available to a (stand-alone) business entity under usual market conditions. This topic is of great concern of tax authorities, especially of General Financial Directorate of the Czech Republic (GFD), which acts as application guarantor of the project. The debt capacity assessment has great potential in reclassification of financial transaction among related business entities, where the taxpayer, in case of doubts, needs to prove, that the transaction can be considered by its nature as a form of debt and not an equity like payment. If the taxpayer fails to prove this, there interest payment shall not be tax deductible. For the tax authorities such assessment is identify potentially suspicious transactions. The collaboration with GFD and the adoption of the model in their methodology can lead to more consistent and reliable financial practices, further promoting long-term economic stability and sustainability. The study does not explicitly address the gender dimension.

- 7) – 10) V. Novotný; P. Sysel; Scalable distributed sensor system for sensing of mechanical vibrations (utility model)

V. Novotný; Very long-range fibre optic mechanical vibration sensor (utility model)

V. Novotný; P. Sysel; P. Hanák; F. John; A. Prokeš; Optical probe for middle range distributed sensing of mechanical vibrations (functional sample)

V. Novotný; P. Sysel; P. Hanák; A. Prokeš; F. John; Optical probe for distributed sensing of mechanical vibrations over long distances (functional sample)

Within Security Research Programme BV III/1-VS of the Ministry of Interior of the Czech Republic, the academic staff at the Department of Informatics of FBM BUT under the leadership of doc. Novotný implemented the research project entitled “System for Centralized Supervision of Complex and Large Area Objects of Critical State Infrastructure” (1 October 2017 to 30 April 2021) <https://starfos.tacr.cz/en/projekty/VI20172020078> , followed by the project “Distributed Sensor System for Critical Infrastructure Surveillance” (1/2023–12/2025) <https://starfos.tacr.cz/en/projekty/VK01030213> under the programme OPSEC (2023 – 2029) of the Ministry of Interior of the Czech Republic. The outputs of the first project were utility models (see Table 3.4.1) “Scalable Distributed Sensor System for Sensing of Mechanical Vibrations” (2019, Model No. 33859) – the basis of the utility model is a scalable system for sensing of mechanical vibrations along single-mode optical fibres serving as a distributed sensors – and “Very Long Range Fibre Optic Mechanical Vibration Sensor” (Model No. 34834, 2021) – the proposed solution represents an optical fibre sensor unit for sensing mechanical vibrations with an increased sensor range longer than 200 km.

The output of the second project VK01030213 (functional samples: Optical Probe for Middle Range Distributed Sensing of Mechanical Vibrations (2019) and Optical Probe for Distributed Sensing of Mechanical Vibrations Over Long Distances (2020) should improve the previous system capabilities mainly in the area of event classification using artificial intelligence and in the area of decreasing the sensor production costs.

The sensor system for centralized supervision of complex and large sites is based on the principle of distributed sensing of mechanical vibrations using a standard single-mode telecommunications optical fibre and sophisticated methods of detection, localization, and identification to monitor the development of events in the monitored zone in real time. A large site can be, for example, an industrial enterprise, parts of the energy distribution network (substations, lines, power plants), extensive pipeline systems for the transport of media (gas, oil, water, etc.), transport infrastructure (railways, roads). The system can detect events along the fibre up to a distance of 200 km with one sensor unit. The system continuously generates situation overview and evaluates the critical infrastructure threat severity.

The developed system offers great potential for applications in the field of complex security systems or protection of various sites, especially critical infrastructure. This includes various types of engineering line structures – state borders, pipeline systems, road and railway structures, distribution of energy and communication networks; further perimeters of buildings – warehouses of hazardous materials, weapons and ammunition, strategic raw materials, airports, power plants, shooting ranges, military districts; including private land and buildings. The sensor system can therefore be used for detection, localization and classification of sources of mechanical vibrations for supervision, i.e. obtaining an overview of the situation in the immediate vicinity of the sensor fibre and evaluation of the degree of danger of the situation, i.e. whether it is a potentially dangerous situation, which serves to prevent damage to the monitored site or its complete decommissioning, and thus helps prevent greater impacts, which may take the form of not only financial or property damage, but also damage to the health or even the human lives. The research results are gender neutral.

Table 3.4.1 - Overview of research results in the period under evaluation

Type of result ³⁰	Year of application	Name
certified methodology	2022	Certified methodology for valuation of family businesses (REŽŇÁKOVÁ, M. et al.)
certified methodology	2022	Digital transformation methodology for business model innovation (ŠIMBEROVÁ, I. et al.)
certified methodology	2021	iScorecard methodology; Innovation Scorecard (ŽIŽLAVSKÝ, O.; FISHER, E.)
book	2021	Innovation scorecard: A method to measure innovation in agile projects and business environments (ŽIŽLAVSKÝ, O.; FISHER, E.)
peer-reviewed scientific article in WoS database	2022	New Indicators of Innovation Activity in Economic Growth Models (REŽŇÁKOVÁ, M.; ŠTEFÁNKOVÁ)
peer-reviewed scientific article in WoS database	2021	A novel approach to estimating the debt capacity of European SMEs (KARAS, M.; REŽŇÁKOVÁ, M.)
utility model	2019	Scalable distributed sensor system for sensing of mechanical vibrations (NOVOTNÝ, V.; SYSEL, P.)
utility model	2020	Very long range fibre optic mechanical vibration sensor (NOVOTNÝ, V.)
functional sample	2019	Optical probe for middle range distributed sensing of mechanical vibrations (NOVOTNÝ, V.; SYSEL, P.; HANÁK, P.; JOHN, F.; PROKEŠ, A.)

³⁰ Specify the specific type of result. Add rows as needed.

functional sample	2020	Optical probe for distributed sensing of mechanical vibrations over long distances (NOVOTNÝ, V.; SYSEL, P.; HANÁK, P.; PROKEŠ, A.; JOHN, F.)

Note 1: Please list and describe the results already applied in practice or heading towards application in practice with existing or prospective impact on the society (e.g. domestic or foreign patents, sold licenses, spin-offs, prototypes, varieties and breeds, methodologies, significant analyses, surveys, expert outputs for policymaking or other forms of non-publication outputs, etc.). Indirect results of research, development and creative activities with documented societal impact, e.g. expert activities, services to the public/government/scientific community, may also be reported.

TRANSFER OF RESULTS INTO PRACTICE

3.5 Transfer of results into practice

The evaluated unit shall briefly describe its system for transferring results into practice. It shall also indicate up to five of the most typical users of its results, whether in the university environment or in the non-university application/corporate sphere, detailing how it collaborates with them and how it seeks out new users (using a maximum of five specific examples).

It will also indicate whether and how it commercialises R&D&I results (e.g. selling licences, setting up start-up or spin-off companies, etc.)³¹, providing brief description of the commercialisation methods used. The effectiveness of the transfer of results and the commercialisation of R&D&I results will be described using a selection of results (max. five) listed in annex table (Table 3.4.1).³²

Additionally, the evaluated unit shall briefly comment on the funds received during the period of 2019–2023 from non-public, non-grant sources (e.g. licences sold, spin-off revenues, donations, etc.). A full summary shall be provided in annex table (Table 3.5.1).

Maximum 500 words plus 200 words for each provided example of finding a new user of results and commercialization.

Self-assessment:

The FBM focuses on supporting businesses and organizations through workshops, consultations, mentoring, research projects and other activities. The FBM plays a pivotal role in advancing the institution's knowledge transfer initiatives by acting as a bridge between academic research and practical application. Through its emphasis on the commercialization of R&D projects, the faculty fosters innovation by providing strategic support for transforming research outcomes into marketable solutions, thus contributing to the broader goals of the university. Additionally, the faculty's expertise in entrepreneurship is instrumental in disseminating entrepreneurial skills and know-how across all faculties of BUT. This dual approach not only enhances the practical impact of the university's research but also cultivates a university-wide entrepreneurial mindset, equipping students, researchers, and staff with the tools necessary to succeed in dynamic, innovation-driven environments.

The typical user of applied research results generally came from the corporate sphere, government and public institutions. These users are not limited to the Czech Republic but include also Slovakia and often Czech branches of multinational companies. In cybersecurity, it is mostly larger companies that require advanced solutions to protect their information systems and data. In addition, there are professional organizations dealing with project management, such as IPMA CZ (International Project Management Association Czech Republic) and PMI (Project Management Institute), and risk management, such as CZRMA (Czech Risk Management Association) and its connection with the European organization FERMA (Federation of European Risk Management Associations).

Research projects funded by the Technology Agency of the Czech Republic are always prepared in cooperation with the application sector, the so-called external guarantor of the application of the research projects. External guarantor is an organization interested in the application and utilization of planned research project outputs/results in practice and plays a key role in ensuring these outputs/results are applicable and subsequently implemented and utilized in practice.

External guarantors of the application of the research projects supported by the Technology Agency of the Czech Republic were:

³¹ In the case of military HEIs, their specific position is taken into account when evaluating the commercialisation/evaluation of R&D&I results.

³² If the commercialisation of R&D&I results is carried out in this way.

- Association of Small and Medium-sized Enterprises of the Czech Republic and Ministry of Labour and Social Affairs of the Czech Republic in case of the project: Family Businesses: Value Generators and Value Determination in the Succession Process.
- General Financial Directorate of the Czech Republic in case of the project: Setting the Current price for the Financial Transactions while Using the Arm's Length Principle.
- Ministry of Industry and Trade of the Czech Republic in case of the projects: Digital Transformation for Business Model Innovations in Small and Medium Sized Enterprises in the Czech Republic, and Stabilization and Development of SME in Rural Areas.
- Energy Regulatory Office of the Czech Republic in case of the project: Determinants of Relationships Between Wholesale and Retail Energy Prices.
- Red Hat Czech s.r.o. in case of the project: Innovation Scorecard: A Controlling Framework of Innovation Projects for the IT Sector.
- Mendel University in Brno in case of the project: Governance and Ethics in Public Administration.

Ministry of the Interior of the Czech Republic is the user of the research results of the projects System for Centralized Supervision of Complex and Large-scale Objects of Critical State Infrastructure and Distributed Sensor System for Critical Infrastructure Surveillance.

Below are five examples of knowledge transfer into practice:

1) Transfer of entrepreneurial approach within BUT

Methodical approaches, based on the existing creative activity, are transferred to the environment of start-up companies. These approaches have become the sound foundation of the "[Innovation and Entrepreneurial Ecosystem of the BUT ContriBUTe](#)". This platform was developed on the basis of research findings of FBM representative working in the US on research under a Fulbright grant from 8/2023-12/2023.

Ecosystem ContriBUTe aims to support the transfer of knowledge from the academia to the application sphere in the form of establishing university spin-offs and start-ups. As part of ContriBUTe, FBM academics provide support for entrepreneurship and knowledge transfer across the university. FBM offers crucial support in the areas of business models and brand development for start-up companies in technology transfer. The core pillars of the offer for academics and students are:

- Education and personal development (courses and workshops for students and academics).
- Consultation and collaboration.
- Idea development and implementation.
- Incubator and accelerator.

Due to the massive knowledge transfer from FBM the entire university is recognized leader in the entrepreneurship support in the Czech Republic. The ecosystem supports more than 250 participants across the university in its programs every year, more than 150 business projects used ContriBUTe support so far. And more than 15 of those projects have been already transformed into real business (e.g. [Biom](#), [MaNoSens](#), [Plastic Guys](#), [OMGRobotics](#), [TechMountain](#), [Deeper Sleeper](#), [Duncal Technologies](#), [Volteek](#), [Wattee](#), or [WIKARSKA symbiotics](#)).

FBM also offers a Business Idea Development and Realization course for BUT students. Over the past two years, a total of 190 students have taken the course.

2) Cooperation with the South Moravian Innovation Centre

In cooperation with the South Moravian Innovation Centre - [JIC](#), FBM is developing a project of cooperation of faculties in the field of support of spin-off and start-up companies. This project is an

integral part of the Innovation and Entrepreneurial Ecosystem of the BUT ContriBUTe and allows to use the multidisciplinary potential of the BUT with the use of the potential of the JIC Centre. Several ideas have emerged from the [BUT Student Entrepreneurship Award](#) competition which have already managed to transform into real business and are the bearers of the BUT Start-up brand: e.g. [Volteek](#), [MaNoSens](#), [OMG Robotics](#). Academics from FBM play a key role in this project - provide expert support, advice, and work as evaluators of business plans.

3) Support to existing companies: INPROFO Consulting

A similar approach is applied to support existing companies. Also in this focus, the FBM can offer the transfer of top approaches for the management of development. The programme [INPROFO Consulting](#), which was designed in the reporting period, opens up the possibility of a solution to the specific companies through consultation and educational workshops. It connects the requirements of companies with the FBM also through the elaboration of students' works or projects with research character.

INPROFO Consulting supports start-up and emerging companies. Examples of realized cooperation in the area of development of the business model and brand development:

- Biom Project – <https://www.instagram.com/biomproject/>
- Duncal Technologies s.r.o. – <https://duncaltech.com/en/>
- Deeper sleeper project – <https://deepersleeper.eu/>

In March 2021, the next preparatory phase of the development of the commercialisation support framework started, focusing on the legislative aspects. The entire project, "Born at BUT FBM", focuses on two areas - support for spin-off companies and support for start-up companies. In the area of start-ups, the need to strengthen the possibilities to support student start-ups was identified. Building on the activities of the Entrepreneurship and Small Business Development (ESBD) study programme, areas in which start-up companies can be supported have been defined.

4) Student start-up companies

Another example of the cooperation with the application sphere is the project of multimedia laboratory and its use. The cooperation with the start-up company 6eye Studio, s.r.o., founded as the output from the study programme ESBD (www.esbd.cz) – realization of the multimedia laboratory to support video conferencing and multimedia production. The created laboratory is currently used for research and pedagogical activity. An example of pedagogical use can be the podcast named "ESBD Talks", supporting the entrepreneurial spirit: [ESBD TALKS | Podcast on Spotify](#). This podcast is broadcasted as a student programme within the ESBD programme.

5) Non-profit organizations

The FBM supports the social impact of activities through a unique programme of cooperation with the non-profit sector. This cooperation, which has been developed and defined in the monitored period, provides non-profit organizations with excellent know-how, which would not be available to them otherwise. For more information see: [Cooperation with non-profit organisations | Faculty of Business and Management, BUT](#)

Table 3.5.1 - Summary of non-public revenues received during the period under evaluation

Type of revenue	Revenue (in thousands CZK/EUR)				
	2019	2020	2021	2022	2023
Licence	-	8/316	-	-	-
Other	-	-	-	30/1183	-
Total	-	8/316	-	30/1183	-

Note: Enter funds raised for R&D&I from non-public sources besides grants or contract research (e.g. licences sold, spin-off company revenues, donations, etc.) in the calendar year.

POPULARIZATION OF VAVAI

3.6 The most important activities in the field of popularization of R&D&I and communication with the public

The evaluated unit shall briefly describe its main activities related to the popularisation of R&D&I and communication with the public (e.g. popularisation lectures, citizen science initiatives, etc.) during the period of 2019–2023 and provide up to 10 examples that it considers the most significant.

Maximum 500 words plus 200 words for each example given.

Self-assessment:

FBM is committed to fostering a culture of R&D&I that resonates beyond academia and connects with the broader public. Over the past reporting period, the faculty has actively engaged in various initiatives aimed at popularising R&D&I and promoting science communication. The faculty maintained effective communication with the public through basic communication channels with broad reach, such as the faculty's websites, media, social networks, and press releases. These communication channels attract thousands of visitors annually. Workshops, panel discussions and roundtables are another tool successfully used for popularization. Some of the topics communicated between 2019 and 2023 included: Adoption of the single European currency in the Czech Republic; Business and economic impact of the Dieselgate affair; The impact of Brexit on business in the Czech Republic; Business opportunities in China; Robotization and digitalization of business models etc.

1) Summer School of Entrepreneurship and Innovation 2023 – organised together with Finland's Tampere University of Applied Sciences. The aim of the event was to popularize the knowledge transfer, entrepreneurship development at universities and the establishment of university start-up and spin-off companies. The event targeted not only students and academics, but also the general public. The event featured several activities such as an opening panel discussion focused on entrepreneurship issues and a presentation of research results on entrepreneurship promotion at Case Western Reserve University in Cleveland. The panel discussion also featured two BUT projects - BIOM from the BUT Faculty of Architecture and the BUT [scicake](#) start-up. In the following days, events were held to present the possibilities of supporting knowledge transfer at the BUT, a presentation of the start-up environment and entrepreneurial approaches at a Finnish university ([Proakatemia](#)), the experience of entrepreneurship in the Nordic countries [Nordic Business Forum - Europe's Largest Business & Leadership Event](#) and workshops and a hackathon for students. In total, almost 10 start-up companies from BUT and more than 200 participants attended the event. One of the key outcomes of the event was the decision to continue in 2024 under the [Innovation and Entrepreneurial Festival](#).

2) Conferences and Workshops – the faculty regularly organizes conferences and workshops. Among the most important were the following:

- [International scientific conference Perspectives of Business and Entrepreneurship Development](#)**
 2023: “Interaction of Law and Economics: Sustainable Development”. Attended by 104 academics from 6 European countries.
 2021: “Perspectives of Business and Entrepreneurship Development: Digital Transformation for Business Model Innovation – Economic, Management, Finance and System Engineering from the Academic and Practitioners Views”. Attended by 94 academics from 12 countries and 45 company representatives.

- FBM has been a co-organizer of the [International Conference on Applied Sciences "Contemporary Issues in Economy"](#) since 2011. Attended by more than 100 scientists from 15 countries (12th edition, 2023).
- **International Scientific Conference: Family Business: Specifics, Contributions, Challenges** (September 2021)
- In 2021, the academic staff of the FBM participated in the international conference SOI 2021 - **Society of Open Innovation: Technology, Market, and Complexity** by creating and leading their own section "**Business Model Innovation**" and also by presenting joint results of cooperation with colleagues from Riga Technical University.
- FBM is a co-organizer of the [Global Business and Technology Association \(GBATA\) international conference](#) (held on an annual basis, international participation of about 250 people).

3) Student conferences and workshops

Student conference on cybersecurity, the "Cyber Security Conference," is a regular event, dedicated to the issue of cyber security with an emphasis on the business and strategic view of cyber security. Number of student participants – approx. 90. Number of participants from partner companies – approx. 15.

Workshop on student team projects held in April 2022 at FBM. The series of five workshops for student team research projects, organized in collaboration with non-profit organizations, had a significant impact. By aligning the project assignments with the goals of the non-profit organizations, the workshops provided students with the opportunity to contribute to meaningful causes and address real-world challenges.

Academics contribute to organizing the international **interdisciplinary competition Euroweek** for students. Euroweek is held annually under the auspices of the Prime Networking European university network. The competition focuses on addressing current issues in social, environmental, and economic areas. Academic representatives from the universities accompany the students, mentor them, participate in the conference, and arrange further collaboration.

4) Summer Schools

- **Summer School of Entrepreneurship and Innovation** held in November 2023. An international event focusing on the support of entrepreneurial spirit, networking and knowledge transfer in the BUT. Information about the event is available at the following link: <https://www.vut.cz/en/but/news-f19528/summer-s-not-over-come-to-the-summer-school-of-entrepreneurship-and-innovation-2023-at-fbm-d247441>
- **International Summer Program** is co-organized by FBM in collaboration with CETYS Universidad (Mexico) every July since 2015. Approximately 180 participants attend the school each year. FBM academics provide a course in management.
- **Summer School: Educational Laboratory to Unlock the potential of Innovation and Sustainable Business Development** was held from June 28 to July 2, 2021. There were 20 lectures and workshops for 57 students from 4 European universities. 5 workshops were prepared and presented by experts from Lavazza, Storyous Czech, ABB Group, Hitachi ABB Power Grid, SAP.

5) Partnerships with primary and secondary schools & Student competitions

Secondary school competitions play an important role in popularizing science, as they provide students with the opportunity to engage in solving real-life economic, managerial and entrepreneurial problems. These competitions motivate students to take a deeper interest in economy and entrepreneurship by fostering creativity, analytical thinking, and teamwork. FBM regularly organizes two competitions: **Businesspoint** (management and marketing competition for high school students), and **MASO** (marketing competition, where students work on solving a real assignment for practice). Thanks to these competitions, students can gain a better understanding of the possibilities of studying at FBM and establish connections that may inspire them in their further education.

BUT Junior is a project of the BUT aimed at pupils at primary schools and junior secondary schools. FBM has been involved in this popularization activity for five years. The FBM lecturers present selected basics of marketing in a fun way and then in the second part the primary school pupils work in teams. The task is to design the packaging of a product according to the customer's requirements. The basics of the theory of Quality Function Deployment and marketing communication are used.

6) Partnerships with community organisation

A key value of the faculty is responsibility towards society and the environment. This commitment is realized, among other things, through the transfer of its unique know-how into the practice of non-profit organizations, which we altruistically help to increase their visibility and streamline their processes. **Cooperation with non-profit organisations** began in 2015, inspired by the University of Coimbra, Portugal. Service Design Management and Marketing course students are engaged with local non-profits (non-profit organizations focused primarily on services for the disabled and socially disadvantaged) through project-based learning. Outputs typically include detailed marketing campaigns, fundraising events or new services design.

7) Researchers' Night (<https://www.nocvedcu.cz/en>) is a nationwide event aimed at popularizing science and research among the general public. FBM offers visitors interactive workshops, lectures, and tours focused on various aspects of research and innovation. A new unique technological product was presented by FBM-born start-up DeeperSleep, showing the journey from the first idea to the prototype, including the plan to launch a functional product on the market. The **LAPROCO laboratory** was divided into several parts, including the transformation of production and planning, the physical layout of the production line, the simulation of the production line including load, and augmented reality in planning. How product creation changes from manual documentation designs to 3D printing was also covered. The strategy workshop focused on connecting strategy, brand, emotions, and transformation, with questions answered on how to easily evaluate market changes and what they mean for the company and the customer, what turns a product into a brand, and how emotions change our view of the brand and its communication. Lastly, a practical lecture on brand building and communication was provided, offering practical insights into building a brand and effective communication. The faculty welcomes approximately 150 visitors on this occasion.

8) New Year's meeting with companies is an annual January meeting with company representatives where research results and examples of the successful collaborations of the FBM with partners are presented. Further discussion is typically focused on opportunities for future collaborations between companies and faculty.

9) Online Engagement and Media Outreach

FBM communicates through its website and social networks such as [Facebook](#) (3,800 followers), Instagram (@vutfp; 3,320 followers) and [LinkedIn](#). FBM also has its own [ESBD TALKS | Podcast on Spotify](#), supporting the entrepreneurial spirit of FBM. This podcast is broadcasted as a student programme within the Entrepreneurship and Small Business Development study programme.

10) Open House Days – one of the key activities in the area of public communication is the regular Open House Days, which are held twice a year and are highly popular. Not only potential applicants but also the general public are targeted. Visitors have the opportunity to tour laboratories, library and meet experts from fields of economy, management, and informatics. During the COVID period, Open House Days were moved to an online format. Each in-person [Open Day attracted 100-200 visitors](#).

IMPLEMENTATION OF RECOMMENDATIONS

3.7 Implementation of the recommendations in Module 3

The evaluated unit will briefly describe how it has implemented the recommendations for Module 3 from the previous evaluation period, if applicable.

Maximum 1000 words.

Self-assessment:

Compared to the previous evaluation period, FBM has significantly improved in winning research grants with an emphasis on applied research (see 3.3 Research projects) and the quality of publications. At the same time, FBM plays a key role in the university transfer system. In the period 2019-2023, FBM has significantly interconnected with other BUT faculties in joint research activities. The significant progress of the faculty in science and research was confirmed by the International Scientific Advisory Board of BUT in the 2023 and 2024 evaluations.

- 1) **Applied research projects** (3.2, 3.3 a 3.4): Intensify contacts and agreements with international partners, focus on an increasing share of international projects. Strengthen relationships with leading companies, industry.

In order to improve the quality and efficiency of research activities, the following guidelines were implemented in the Faculty's internal legislation (Dean's Decision: Support for Scientific Activity and Qualification Growth of Academic Staff in 2022, Dean's Decision: Scope and Structure of Requirements for Scientific Activity of Supervisors of Students of Doctoral Study Programmes, Dean's Decision: Requirements and Criteria for Scientific and Pedagogical Qualifications in Habilitation and Professor Appointment Procedures). All these guidelines are intended to motivate international cooperation. In 2022, the FBM Budget Rules were modified. As part of the rules, more emphasis is given to international cooperation, scientific excellence and collaboration with industry.

BUT is one of ten members within European Universities Linking Society and Technology (EULIST). This project started in autumn 2023 and has 5 working groups. FBM is a part of the project and cooperates on several activities within this project.

FBM connects companies and state enterprises with diploma and dissertation theses on sustainable development, social responsibility, and ethics. These include Corporate Social Responsibility in Supplier-Customer Relationships and Use of the System for Environmental Management of Organizations and Audit.

- 2) **Applied research results** (3.5 a 3.6): Closer cooperation with other faculties.

FBM continues the knowledge support to the [Innovation and Entrepreneurial Ecosystem of the BUT ContriBUTe](#). In close cooperation with the South Moravian Innovation Centre, ContriBUTe is supporting all the BUT faculties in the field of spin-off and start-up companies and their business development. These activities allow to use the multidisciplinary potential of the BUT. Several ideas have emerged from the BUT Student Entrepreneurship Award competition (<https://www.vut.cz/en/students/entrepreneurship>) which have already managed to transform into real business and are the bearers of the BUT Start-up brand. Academics from FBM continue to play a key role in all ContriBUTe activities. FBM offers a Business Idea Development and Realization course for BUT students. Over the past two years, a total of 190 students have taken the course.

It may also be mentioned that a faculty representative was working in the US on research under a Fulbright grant from 8/2023-12/2023. The research was focused on the creation and building of

university centers and entire ecosystems to support entrepreneurship and knowledge transfer. The research findings were directly applied in the development of the ContriBUTe platform.

Academics from FBM also play a key role at the "Born at BUT FBM" project. This project will strengthen opportunities for support and collaboration across faculties and support technology transfer. The area of activities at the level of B2B markets, where there is considerable potential for the development of joint projects, will be strengthened.

FBM also intensified research cooperation with the technical faculties of BUT, namely:

- Faculty of Electrical Engineering and Communication Technology with which an applied research project supported by the Technology Agency of the Czech Republic: "Determinants of the relationship between wholesale and retail energy prices" (2/2023-7/2024) was successfully completed. We continue to pursue the research theme with another joint research project ("Impact of energy price changes on consumer behaviour in the Czech Republic" 5/2024-4/2026, Technology Agency of the Czech Republic)
- Faculty of Informatics on economic assessment and implications of advanced SW engineering tools (this theme is further developed within the joint research project "Verification and Analysis for Safety and Security of Applications in Life" 6/2024-5/2027, HORIZON EUROPE)

3) Cooperation with non-academic environment and technology transfer (3.7, 3.8 a 3.9): Strengthen cooperation with Technology Transfer (TT) and FBM to further develop activities (seminars, courses, projects...) in the preparation of commercialisation proposals. Strengthen cooperation with business and industry in all directions. Strengthen the role of FBM in the TT transfer system.

This recommendation and measures taken are closely connected with 3.5 and the measures described above under the recommendation 2) of 3.7.

FBM is also fully involved in the TT activity coordination through entire university primarily offering support in the plan development and execution of the research commercialization activities. The particular offer of this support is communicated through TT office of BUT.

Programmes within the INPROFO LAB have been strengthened, with an emphasis on the INPROFO Consulting and INPROFO Training pillars. In these programmes, the faculty offers space for cooperation not only with the corporate sector, but also within the framework of inter-faculty cooperation. Within the framework of INPROFO Training, the faculty organizes educational activities aimed at supporting knowledge transfer, either at the level of newly emerging companies or at the level of cooperation with existing companies.

4) Recognition by the scientific community (3.10 a 3.11): Encourage academic staff to publish high quality papers in top scientific journals and to participate in recognised scientific conferences.

Popularization of R&D (3.12): Intensify the publication process in Web of Science or Scopus.

At the FBM, the guidelines (listed in point 1) have been gradually implemented to motivate academic staff financially and in terms of career development to high quality publications (measured by the Impact Factor Quartile). Already during December 2020 and January 2021, a list of scientific journals in the FORD 5.02 area indexed in the WoS and SCOPUS databases was created, with a breakdown by AIS and IF, taking into account the requirements for publication in these journals, in order to increase the chances of authors from FBM to publish their papers.

During the reported period (2019–2023), FBM published 113 articles in JIF journals (Q1 23.01%, Q2 34.51%, Q3 23.89%, Q4 18.58% categories). This represents a substantial increase (67.8%) compared to the previous monitoring period (2014–2018), during which 54 articles in JIF journals were published (Q1 18.52%, Q2 29.63%, Q3 31.48%, Q4 20.37% categories). International collaboration, as measured by the number of papers co-authored with international partners, grew from 26.67% to 43.71% (a 63.89 % increase).

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)
History and Mission of the FBM	3.1	https://www.fp.vut.cz/en/faculty/history-and-mission
Organization Structure of the FBM	3.1	https://www.fp.vut.cz/en/faculty/organization-structure
FBM Study Programmes	3.1	https://www.fp.vut.cz/en/for-students/study-programmes
US-MBA Studies	3.1	https://www.us-mba.cz/en/
MBA in Information Management (in Czech)	3.1	https://www.fp-mba.cz/
Information on Habilitation Procedure and Professor Appointment Procedure	3.1	https://www.fp.vut.cz/en/faculty/notice-board/habilitation-and-professorship-procedures
FBM Research Projects	3.3	https://www.fp.vut.cz/en/research-development/current-projects
INPROFO Consulting	3.5	https://www.fp.vut.cz/en/research-development/inprofo-consulting

• SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: Faculty of Chemistry

FORD: 1 - Natural sciences

SOCIAL CONTRIBUTION OF THE EVALUATED UNIT

3.1 Introductory information about the unit under evaluation

The evaluated unit will describe its mission and vision and provide a general self-reflection of the societal contribution of R&D&I, along with its long-term goals in the fields it develops. The distribution of research activities by type of research will also be commented on.¹ The evaluated unit will describe its organisational structure and size (staffing, number of students, number of study programmes implemented, etc.) based on the data provided in annex tables 3.1.1 to 3.1.6.

Maximum 1000 words.

This is a non-rated indicator that serves as an introduction to the evaluated unit, providing context for data in indicators 3.2-3.7.

Self-assessment:

Mission Statement

The mission of the Faculty of Chemistry (FCH) is to provide high quality education in the chemical disciplines and related fields to both national and international students, in close connection with research activities with a strong international overlap. The FCH emphasises the link between education and research and the needs of the labour market and industry. To achieve this, it relies on an excellent research infrastructure, the high potential of its staff and students, and a harmonised environment that creates individualised and optimised conditions for students to study and staff to work.

Our vision

A research-oriented faculty with an international team of teachers, scientists and students, competitive in an international context, with strong links to industry, providing teaching with an emphasis on the solid foundation in chemical disciplines and linking teaching with excellent research in materials science, biotechnology, environmental protection and related fields to meet the needs of society.

The Faculty of Chemistry (FCH) is one of the smaller chemistry faculties in the Czech Republic and is also one of the smaller faculties within the BUT (the share of FTE within the BUT is about 7%). The composition of the staff is shown in Table 3.1.1. On average, about 87 FTE were involved in the scientific research activities of the faculty during the evaluation period, of which 38% were women. In line with the FCH vision, despite its small size, the FCH carries out dozens of research projects per

¹ Basic, applied, contract, artistic research (see Definition of Terms in Methodology HEI2025+).

year, cooperates with dozens of industrial partners, provides high quality chemistry education in selected areas at all levels of study (BSc, MSc, PhD) and has an extensive network of international contacts for both study visits and research activities.

The FCH fulfils its vision in the field of science and research by addressing a number of socially important topics, e.g. the development of new materials, in particular for the construction, automotive, electrical, medical, mechanical engineering and defence industries, the valorisation of food and agricultural wastes in the form of biotechnological production and application of industrially relevant metabolites, recycling and processing of plastic waste, sustainable energy sources, e.g. 3rd generation solar cells, hydrogen production or greenhouse gas reduction, environmental protection, assessment of food quality and authenticity, etc. The results of FCH research also have an impact on the protection of cultural heritage or internal security of the Czech Republic.

The FCH is predominantly oriented towards basic research (75%), the output of which consists of high-quality publications, the majority (> 90%) of which are published in journals with an IF above the median of the field, including the most prestigious journals, which are in the first decile of their category, e.g. Advanced Functional Materials IF 18.5, Angewandte Chemie-International Edition IF 16.1, Biotechnology Advances IF 12, etc.

The FCH carries out more than 30 basic or applied research projects in its scientific fields every year. The faculty is successful in public grant competitions of domestic and European providers, e.g. the Czech Technology Agency, the Grant Agency of the Czech Republic, the Ministry of Industry and Trade and the HORIZON 2020, INTER EXCELLENCE, INTERREG, in which the FCH cooperates with renowned foreign universities and also acts as a project coordinator.

FCH implements its mission of linking education and research with the needs of the labour market and industry through projects and research activities with companies in the broad field of applied chemistry. In total, the FCH collaborates with more than a hundred different industrial companies (see e.g. FCH 2023 Annual Report, [link](#)). For these partners, the FCH carries out applied research and development of new technologies, materials and processes, collaborates in the transfer of research results into practice and, in line with the FCH mission, also involves students in solving scientific research problems linked to the practical needs of companies, thus enabling them to gain practical experience and skills needed for their future careers. These activities also have an economic impact - they solve current and development-related problems of the cooperating companies and help them to maintain a competitive position in the market. In addition to the projects, in the period under review FCH also carried out an enormous number (for its size) of 376 research contracts worth more than CZK 43 million / EUR 1.7 million.

The confirmation of the FCH as a natural centre of science and research, not only regionally but also internationally, was also the result of the peer review evaluation by the International Scientific Council in 2023 ([link](#)) and the international evaluation panel in 2024 ([link](#)), which evaluated the period 2019-2023. The international panel of experts concluded that *"FCH is performing above international standards because it addresses relevant and timely research topics and shows results that are of a very good standard in European comparison. The production of quality results is commensurate with the size of the FCH and the quality of the results stands up to international comparison. The FCH is intensively involved in international projects and international cooperation, which is evidenced by joint high-quality results and outputs. Applied research outputs are applicable in practice and have or can have significant societal impacts. The societal impact is reflected in the recognition by the research community, which can be demonstrated e.g. through invited lectures, participation in committees of scientific bodies and editorial boards of quality journals, project review panels, major*

awards etc. FCH is also successful in competing for international research grants and is extremely successful in obtaining national grant funding."

The faculty is divided into four institutes, each with its thematic focus (see Table A). For more information, see the links to the webpages.

- Institute of Physical and Applied Chemistry ([link](#)). The core subject is physical chemistry with an overlap into chemical physics. The focus covers four basic branches of applied physical chemistry: (bio)colloid chemistry, organic electronics and photonics, photochemistry and plasma chemistry.
- Institute of Materials Science ([link](#)). The institute provides research and teaching in the field of chemistry and technology of materials with a focus on building materials, polymers, composites, ceramic materials, metals and corrosion protection.
- Institute of Food Science and Biotechnology ([link](#)). The institute's research focuses on the chemistry, analysis and technology of food and natural products, and the use of biotechnology in the production of modern foods and raw materials. Attention is also given to the processing of waste raw materials from the agro-food industry and their use in the biotechnological production of industrially important metabolites such as bioethanol, bioplastics, enzymes and other specific metabolites.
- Institute of Chemistry and Technology of Environmental Protection ([link](#)). The Institute focuses on chemical disciplines in applied analytical, organic, environmental and forensic chemistry, ecotoxicology, advanced environmental technologies and environmental sciences.

In addition to these four institutes, the FCH also has a Materials Research Centre ([link](#)), which operates some of the key infrastructure instruments and provides administrative support for the acquisition and solution of research projects. Established with the help of a €10 million grant, it now serves as a platform for the sharing of cutting-edge scientific instruments between the FCH institutes and other BUT faculties.

Table A: Departments of the Faculty of Chemistry and their relation to the FORD research topics.

Research topics (FORD)	Institute of Physical and Applied Chemistry (link)	Institute of Materials Science (link)	Institute of Food Science and Biotechnology (link)	Institute of Chemistry and Technology of Environmental Protection (link)
1.3 Physical sciences	x	x		
1.4 Chemical sciences	x	x	x	x
1.5 Earth and environmental sciences	x			x
1.6 Biological sciences			x	x
2.5 Materials science	x	x		
2.8 Environmental biotechnology			x	
2.9 Industrial biotechnology			x	
2.10 Nanotechnology	x	x		

Further information can be found here:

- Web page of the faculty: <https://www.fch.vut.cz/en/>
- Short video introduction of the FCH: <https://www.youtube.com/watch?v=mAMVpgSxgwM>

Table 3.1.1 - Staffing per FTE²

Academic/ Professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	10,0/2,5	9,4/2,0	10,7/2,0	13,6/2,1	15,2/2,5	58,9/11,1
Associate Professor	13,7/2,8	15,7/4,2	16,9/5,7	16,3/6,6	15,3/6,0	77,9/25,3
Assistant Professor	35,5/16,0	33,1/15,0	33,0/12,6	30,9/11,3	38,4/15,4	170,9/70,3
Assistant	0,0/0,0	0,0/0,0	0,0/0,0	0,2/0,0	0,7/0,0	0,9/0,0
R&D Personnel ³	1,0/0,0	1,0/0,0	1,0/0,0	0,0/0,0	0,0/0,0	3,0/0,0
Researchers in other categories ⁴	9,0/2,1	5,1/2,2	20,8/9,1	28,2/15,3	21,6/10,8	84,7/39,5
Technical and economic staff ⁵	90,1/57,0	88,2/58,0	79,9/58,3	68,3/50,3	70,2/52,9	396,7/276,5
Scientific, research and development staff involved in teaching activities	2,3/2,3	2,1/2,1	2,5/2,4	4,9/2,9	4,9/3,4	16,7/13,1
Early career researchers ⁶	3,1/2,2	4,9/0,9	4,9/1,2	4,6/1,2	2,8/1,4	20,3/6,9
Total ⁷	164,7/84,9	159,5/84,4	169,7/91,3	167,0/89,7	169,1/92,4	830,0/442,7

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

² The average number of hours worked is calculated as the ratio of the total number of hours actually worked during the reference period, from 1 January to 31 December, by all staff (including agreement on work activity, excluding agreement on work performance) to the total annual working time pool per full-time employee. The full-time status of the worker in the evaluated unit is always reported. If an employee holds more than one type of full-time job within the evaluated unit, the total sum of the two shall be reported.

³ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

⁴ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

⁵ Who participates in the management and support of R&D&I in the institution.

⁶ See Definition of Terms in Methodology HEI2025+.

⁷ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

3.1.2 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2019 (numbers of physical employees and personnel)⁸

Academic/ professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	2	0	2	1	7	1	1	0
Associate Professor	0	0	3	0	7	2	4	2	1	0	1	0
Assistant Professor	0	0	19	4	9	6	1	1	6	5	1	0
Assistant	0	0	0	0	0	0	0	0	0	0	0	0
R&D Personnel ⁹	1	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁰	2	2	3	1	1	1	2	0	1	0	1	0
Technical and economic staff ¹¹	55	30	21	13	25	17	19	14	11	6	1	0
Scientific, research and development staff involved in teaching activities	0	0	2	2	0	0	0	0	0	0	0	0
Early career researcher ¹²	0	0	5	3	0	0	0	0	0	0	0	0
Total ¹³	58	32	53	23	44	26	28	18	26	12	5	0

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D Personnel, Researchers in other categories and Technical and economic staff are mutually exclusive, i.e. one staff member is reported in only one category. The categories of scientific, research and development staff involved in teaching activities and early career researchers are reported collectively for all the above-mentioned categories.

⁸ The total number of employees/workers as of 31st December of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

⁹ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁰ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹¹ Who participates in the management and support of R&D&I in the institution.

¹² See Definition of Terms in Methodology HEI2025+.

¹³ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I Personnel, Researchers in other categories and technical and economic staff.

3.1.3 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2023 (numbers of physical employees and personnel)¹⁴

Academic/ professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	4	0	6	2	6	1	2	0
Associate Professor	0	0	2	0	9	2	2	2	2	2	0	0
Assistant Professor	0	0	17	3	16	7	2	1	4	4	0	0
Assistant	1	0	0	0	0	0	0	0	0	0	0	0
R&D Personnel ¹⁵	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁶	31	16	11	5	2	2	0	0	1	0	1	0
Technical and economic staff ¹⁷	6	3	9	6	22	15	24	22	14	8	3	2
Scientific, research and development staff involved in teaching activities	0	0	3	2	1	1	0	0	0	0	0	0
Early career researcher ¹⁸	0	0	4	2	0	0	0	0	0	0	0	0
Total¹⁹	38	19	46	18	54	27	34	27	27	15	6	2

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

¹⁴ The total number of employees/workers as at 31.12. of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

¹⁵ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁶ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹⁷ Who participates in the management and support of R&D&I in the institution.

¹⁸ See Definition of Terms in Methodology HEI2025+.

¹⁹ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

Table 3.1.4 – Students

Type of study	2019		2020		2021		2022		2023		Total	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Undergraduate	681	447	738	500	588	366	738	467	675	402	1 999	1 286
Master's ²⁰	335	228	340	234	322	226	293	202	273	177	919	623
Doctoral	132	72	159	88	142	78	157	85	148	83	285	163
Lifelong Learning Courses	0	0	0	0	0	0	0	0	0	0	0	0
Total	1 148	747	1 237	822	1 052	670	1 188	754	1 096	662	3 203	2 072

Table 3.1.5 - Study programmes in Czech/English

Type of study programme	Total ²¹ / Of which professional study programmes											
	2019		2020		2021		2022		2023		Total	
Undergraduate	5 / 0	0 / 0	7 / 0	1 / 0	6 / 0	1 / 0	6 / 0	1 / 0	6 / 0	1 / 0	8 / 0	1 / 0
Master's	5 / 0	0 / 0	5 / 1	0 / 0	5 / 1	0 / 0	5 / 1	0 / 0	5 / 1	0 / 0	11 / 1	0 / 0
Doctoral	5 / 3	0 / 0	4 / 4	0 / 0	5 / 3	0 / 0	5 / 3	0 / 0	5 / 2	0 / 0	8 / 6	0 / 0
Lifelong Learning courses	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Total	15 / 3	0 / 0	16 / 5	1 / 0	16 / 4	1 / 0	16 / 4	1 / 0	16 / 3	1 / 0	27 / 7	1 / 0

Note: For each SP type, enter the number of SPs in Czech language in the first cell and insert the number of SPs in English language after the slash in the same cell (e.g. 15/3), enter the number of professional SPs in Czech language in the second cell and insert the number of professional SPs in English language after the slash. Follow a similar procedure in the last column of the table (Total).

3.1.6 – R&D&I capacities

R&D&I field	FORD	FORD share [%]	Predominant type of research	Total share of industry group [%]
1. Natural Sciences	1.1 Mathematics		---	60
	1.2 Computer and information sciences		---	
	1.3 Physical sciences	5	Basic Research	
	1.4 Chemical sciences	40	Basic Research	
	1.5 Earth and related environmental sciences	10	Basic Research	
	1.6 Biological sciences	5	Basic Research	
	1.7 Other natural sciences		---	
2. Engineering and	2.1 Civil engineering		---	40

²⁰ All master's degree students are listed, regardless of the length of their programme of study.

²¹ The total number of study programmes for which admissions have been announced in a given academic year.

Technology	2.2 Electrical engineering, Electronic engineering, Information engineering		---	
	2.3 Mechanical engineering		---	
	2.4 Chemical engineering		---	
	2.5 Materials engineering	20	Balanced basic and applied research	
	2.6 Medical engineering		---	
	2.7 Environmental engineering		---	
	2.8 Environmental biotechnology	10	Basic Research	
	2.9 Industrial biotechnology	5	Balanced basic and applied research	
	2.10 Nanotechnology	5	Basic Research	
	2.11 Other engineering and technologies		---	
3. Medical and Health Sciences	3.1 Basic medicine		---	
	3.2 Clinical medicine		---	
	3.3 Health sciences		---	
4. Agricultural and veterinary sciences	4.1 Agriculture, Forestry, and Fisheries		---	
	4.2 Animal and Dairy science		---	
	4.3 Veterinary science		---	
	4.4 Other agricultural sciences		---	
5. Social Sciences	5.1 Psychology and cognitive sciences		---	
	5.2 Economics and Business		---	
	5.3 Education		---	
	5.4 Sociology		---	
	5.5 Law		---	
	5.6 Political science		---	
	5.7 Social and economic geography		---	
	5.8 Media and communications		---	
	5.9 Other social sciences		---	
6. Humanities and the Arts	6.1 History and Archaeology		---	
	6.2 Languages and Literature		---	
	6.3 Philosophy, Ethics and Religion		---	
	6.4 Arts (arts, history of arts, performing arts, music)		---	
	6.5 Other Humanities and the Arts		---	
Total		100 %	-	100 %

RECOGNITION BY THE RESEARCH COMMUNITY

3.2 Recognition by the research community

The evaluated unit will briefly comment on its position in the research community. It shall consider individual and other prestigious R&D&I awards, participation of its academic staff in the editorial boards of international scientific journals, elected membership in professional societies, major invited lectures given by the evaluated unit's academic staff abroad or by foreign scientists and other relevant guests at the evaluated unit. Additionally, it will address the involvement of staff in the evaluation of national or European project/programme calls over the period of 2019–2023 based on the data provided in annex tables 3.2.1 to 3.2.5 (max. 10 most relevant items). If necessary, the evaluated unit shall list any additional services to the scientific community that it considers relevant.

Maximum 1000 words.

Self-assessment:

FCH researchers are recognised experts in the international scientific community. This is reflected in their **participation in a number of professional associations**, e.g. Advisory Board within the Biobased Materials Division, European Federation of Biotechnology ([link](#)), Board Member of the International Humic Substances Society ([link](#)), Vice-Chair of COST Actions (CA19110 PIAGri 2020-2024 ([link](#)), COST CA20114 PlasTher 2021-2025 ([link](#)), member of the Editorial Board (Polytechnic University of Lublin Publishing House), and in **memberships in scientific committees** of international scientific conferences (more than 10 per year) e.g. Nanocon ([link](#)), European Symposium on Biopolymers ([link](#)), Interdisciplinary Meeting of Life Scientists ([link](#)), etc.

The FCH also regularly **organises its own international conference**, Chemistry and Life, every 3 years. The recognition of the FCH by the international scientific community is evidenced by the very high quality of **outstanding international speakers**, e.g. prof. Mc Culloch, H-index 122 (Princeton University, USA and University of Oxford, UK), prof. Saritciftci H-index 106 (Johannes Kepler University Linz, Austria), Prof. Chang H-index 31 (National Chemg Kung University, Tai-wan), Prof. Glowacki H-index 35 (Linköping University, Sweden), Prof. Radecka H-index 28 (University of Wolverhampton, UK), etc.

However, the world's top scientists also come to the FCH outside this conference. Table 3.2.4 shows a selection of personalities with whom the FCH research teams collaborate and who have given lectures during the period under review; the total number of foreign experts who have given lectures at the FCH is much higher. **Each year there are around 40 visits by scientists from almost 20 countries** around the world. The FCH's recognition as an institution is also demonstrated by its researchers being invited to collaborate with foreign universities. Every year, about 40 trips are made by our researchers to foreign institutions. However, at the time of the Covid pandemic, mobility was significantly restricted. Table 3.2.3 shows selected examples of invited lectures.

The quality of research at the FCH is also evidenced by the fact that it regularly hosts **foreign researchers on long-term visits**. In 2019-2023, these include Cigdem Yumusak (10 months), Christoph Ulbricht (4 months) and Mihail Irimia Vladu (4 months) from the research group of Prof. Niyazi Serdar Sariciftci (H-index > 100) ([link](#)) at Johannes Kepler University Linz, Austria, as well as our researchers who spend their long-term stays at renowned institutions abroad, e. g. Prof. Krajčovič worked (10/2021-9/2022) in the research group of the President of the Società Chimica Italiana Prof. Farinola ([link](#)) at the University of Bari Aldo Moro, Italy, Mgr. Alexander Kovalenko, Ph.D. was a researcher at the Johannes Kepler University Linz, Austria in the period 6/2018-5/2019 and Ing. Martin Janča Ph.D. from 3/2021-8/2021 at the University of Maribor, Slovenia.

The strong position of the FCH in the scientific community is also documented by the **awards received** by its scientists and students. These include the prize of the Technology Agency of the Czech Republic

(TAČR) in the category Company, which is awarded to projects in which companies and research organisations cooperate and the results of which have a **significant impact on society**, the Josef Hlávka and Werner von Siemens prizes, which recognise significant results achieved by young scientists, and a prize in the "Make our planet great again" competition organised by the French Embassy in the Czech Republic, which aims to reward the best doctoral theses in all areas of environmental and climate research, i.e. in areas with a significant impact on society.

The outstanding position of the research conducted at the FCH in the scientific community is demonstrated by the fact that the dominant share (> 90%) of FCH publications in the assessment period 2019-2023 are in journals **above the median of the field**, i.e. in journals with IFs falling in Q1 and Q2. A comparison with the previous evaluation period (2014-2018), see Figure 1, shows a doubling of publications in Q1 and Q2, with the main increase in Q1 (2.4 times).

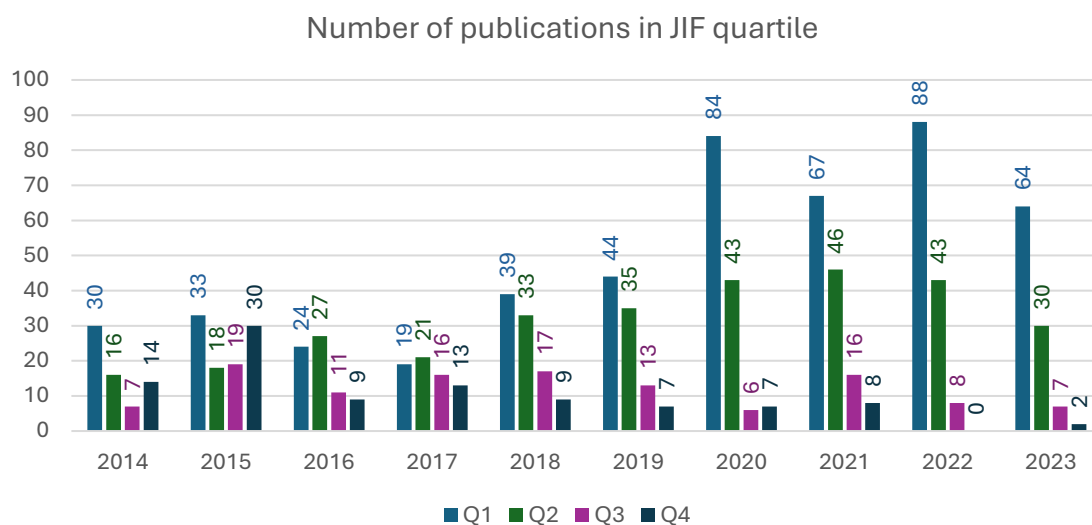


Figure 1: Number of FCH articles published in IF journals by quartile. Q1 corresponds to the 25% most cited journals, Q1+Q2 corresponds to journals with a citation rate above the median of the field. Compared to the previous period, there is a clear increase in high quality publications in the period under review.

Table 3.2.1 - Prestigious R&D&I awards granted during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the award	Awarding institution
Prof. Ing. Miloslav Pekař, CSc.	TAČR 2022 Award in the SOCIETY category, project Revitalisation of agricultural land in drought-prone areas of the Czech Republic.	Technology Agency of the Czech Republic
Ing. Jakub Mach	Karel Velek Award	Ministry of the Environment of the Czech Republic
Ing. Jan Blahut (2023) Ing. Katsiaryna Arkhiptsava (2022) Ing. Lucia Ivanová (2021) Ing. Martin Kadlec (2020)	Josef Hlávka Award	Foundation "The Talents of Josef, Marie and Zdenka Hlávka"
Ing. Alena Razzková Ing. Lenka Michlovská, Ph.D.	TOP 10 master theses of the year 2022	Werner von Siemens Award
Ing. Jan Fučík	lab4you 2022	Shimadzu Europe GmbH
Ing. Jana Szabová	Breaking the Wall of Treatment by	Falling Walls Lab Czech Republic
Ing. Lucia Ivanová	Brno Ph.D. Award Talent	JCMM

Ing. Stevan Gavranović Ing. Martin Sukenik Ing. Katarína Šlosárová Ing. Ivana Nováčková Ing. Zuzana Šedrllová		
Ing. Václav Pecina, Ph.D. Ing. Aneta Pospíšilová, Ph.D. (2020)	Make our planet great again	Embassy of France in the Czech Republic together with BNP Pariba

Note: Provide up to 10 examples.

Table 3.2.2 Participation of academic staff of the evaluated unit in editorial boards of international scientific journals during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of scientific journal, ISSN
Ing. Pavel Šiler, Ph.D.	Hybrid Advances, Elsevier B.V., ISSN: 2773-207X
prof. Ing. Vladimír Čech, Ph.D.	Journal of Adhesion Science and Technology, Taylor & Francis LTD, ISSN: 0169-4243
prof. Ing. Stanislav Obruča, Ph.D.	New Biotechnology, Elsevier B.V., ISSN: 1871-6784
prof. RNDr. Ivana Márová, CSc.	Folia Microbiologica, Springer, ISSN: 0015-5632
prof. Ing. Stanislav Obruča, Ph.D.	Polymers, MDPI, EISSN: 2073-4360
Ing. Pavel Šiler, Ph.D.	Materials, MDPI, EISSN: 1996-1944

Note: Please provide up to 10 examples of academic staff participation in editorial boards of international scientific journals (e.g. editor, editorial board member, etc.).

Table 3.2.3 The most important invited lectures delivered by the academic staff of the evaluated unit at foreign institutions during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Invited lecture title	Name of host institution, or name of conference or event	Year
Prof. Ing. Vladimír Čech, Ph.D.	Layered a-CSi:H/a-CSiO:H nanocomposites	6th International Plasma Science and Interfaces Workshop, Luxembourg	2019
Prof. Ing. Jozef Krajčovič, Ph.D.	Alkyl substitutions a powerful tool for tailormade properties of soluble and versatile organic semiconducting materials	Europe-Korea Conference on Science and Technology (EKC), Wien, Austria	2019
Doc. Ing. Petr Sedláček, Ph.D.	Multiscale Approach to the Structure – Transport – Flow Analysis of semiIPN Hydrogels	Johannes Kepler University Linz	2019
Prof. Ing. Stanislav Obruča, Ph.D.	Biotechnological production of polyhydroxyalkanoates employing stress-adapted microorganisms	Biotech 2020, Prague, Czech Republic	2020
prof. RNDr. František Krčma, Ph.D.	Laboratory mimics of discharge initiated chemistry in prebiotic atmospheres	Christian Albrecht University, Kiel, Germany	2020
Prof. Ing. Jozef Krajčovič, Ph.D.	Molecular tuning; way for improving of application potential of organic semiconductors	Europe-Korea Conference on Science and Technology (EKC), Marseille, France	2022
Prof. Ing. Stanislav Obruča, Ph.D.	Biosynthesis of polyhydroxyalkanoates by stress adapted microorganisms	International Symposium on Biopolymers 2022, Sion, Switzerland	2022
Prof. Ing. Stanislav Obruča, Ph.D.	Polyhydroxyalkanoates – more than just microbial storage compounds	University of Wolverhampton, United Kingdom	2022

Ing. Michal Kalina, Ph.D.	Biochar as a soil conditioner in modern agriculture	University of Basilicata Potenza, Italy	2023
Ing. Pavel Šiler, Ph.D.	Effect of zinc on the properties of portland cement	1st International CroCerS Conference: 1st ACDC 2023 (Advanced Ceramics in Derivative Configurations), Dubrovnik, Croatia	2023

Note: Provide up to 10 examples.

Table 3.2.4 - The most important lectures by foreign scientists and other guests relevant to R&D&I at the evaluated unit during the evaluation period

Name, surname and title(s) of the lecturer	Lecturer's employer at the time of the lecture	Invited lecture title	Year
Vittorio Colombo (H-index = 32)	Bologna University, Italy	Atmospheric pressure plasma systems for bio applications	2019
Niyazi Serdar Sariciftci (H-index = 106)	Johannes Kepler University Linz, Austria	Organic and bio-organic electronic devices (2020) CO ₂ in the atmosphere: From climate change to circular carbon economy (2021) Solar energy conversion strategies and CO ₂ recycling (2022) E-Mobility versus E-Fuels Mobility, or both? (2023)	2020-2023
Giuseppe Lazzara (H-index = 66)	University of Palermo, Italy	Halloysite nanotubes for advanced composite materials	2022
Matthew White (H-index = 20)	University of Vermont, USA	Metal-dielectric photonic crystal organic light emitting diodes	2022
Iso Christl (H-index = 30)	ETH Zurich, Switzerland	Arsenic – a ubiquitous constituent of soils: How its biogeochemical behaviour impacts on human health	2023
Stefano Vecchio Cipriotti (H-index = 32)	Sapienza University of Rome, Italy	The application of thermal analysis techniques to different types of materials	2023
Bong Sup Shim (H-index = 33)	Inha University, South Korea	Multifunctional Nanocomposites from Naturally Derived Materials: Conductive Melanin and Crystalline Nanocellulose	2023
Heinz Langhal (H-index = 40)	LMU University of Munich, Germany	Solvents: Not only versatile media for chemical reactions, but important co-actors by polarity in various fields in chemistry	2023
Markus Scharber (H-index = 47)	Johannes Kepler University Linz, Austria	Understanding the low voltage losses in high performance thin film solar cells	2023

Bernd Rehm (H-index = 69)	Griffith University (Australia)	Bioengineering of Advanced Protein-polymer Materials	2023

Note: Provide up to 10 examples.

Table 3.2.5 - Involvement in the evaluation of national/European research project/programme calls relevant to the R&D&I area at the unit during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the research project/programme call	Name of the authority/guarantor project/programme call contracting of the	Year
Prof. Ing. Vladimír Čech, Ph.D.	Concerted Research Actions (GOA)	European Science Foundation (ESF)	2019
Ing. Jiří Smilek, Ph.D.	Environment for Life 1, 3 (4 projects) ZETA 4 (2 projects)	Technology Agency of the Czech Republic	2019 2020
Prof. Ing. Stanislav Obruča, Ph.D.	COST CZ (2 projects)	Ministry of Education Youth and Sports of the Czech Republic	2019
Prof. Ing. Vladimír Čech, Ph.D.	National Programme for Sustainability (NPU I)	Ministry of Education Youth and Sports of the Czech Republic	2021
Prof. Ing. Jozef Krajčovič, Ph.D.	VEGA_2020	Science Grant Agency (VEGA), Slovakia	2020
Prof. RNDr. František Krčma, Ph.D.	APVV-19-23 (14 projects)	Slovak Research and Development Agency, Slovakia	2019- 2023
Prof. RNDr. František Krčma, Ph.D.	2 projects	FEO, Belgium	2020, 2021
Mgr. Helena Doležalová Weissmannová, Ph.D.	Transport, Environment for Life, KAPPA (7 projects)	Technology Agency of the Czech Republic	2021- 2023
doc. Ing. František Šoukal, Ph.D.	APVV-23	Slovak Research and Development Agency, Slovakia	2023
Prof. Ing. Stanislav Obruča, Ph.D.	GAČR, panel 503, 20 projects	Czech Science Agency	2023

Note: Provide up to 10 examples.

RESEARCH PROJECTS

3.3 Research projects

The evaluated unit shall list at most 10 (considered most significant by the evaluated unit) research projects/activities (regardless of whether they are supported by public funds or based on contract research²²) that it has implemented or participated in during the period of 2019–2023²³. This should be done from the full list in annex tables (Table 3.3.1-3.3.2)²⁴, regarding particularly the results achieved or the application potential of the projects. The unit should also describe how the research projects contributed to the mission and purpose of the evaluated unit. If the evaluated unit has been a participant in listed project, it shall indicate which other entities were involved and describe its contribution to the project. The interdisciplinary aspects of the projects will also be commented on, along with any collaboration with other units of the evaluated HEI.

Maximum 300 words per project.

Self-assessment:

In line with the FCH's mission - *to link education and research with the needs of the labour market and industry* - the FCH involves its students at all levels of study (B.Sc., M.Sc. and Ph.D.) in the form of theses related to the topics addressed in the projects. This interdependence is then reciprocated by the fact that our graduates turn to us when they need to solve the research problems of the industrial companies in which they work.

The **high societal relevance of the research topics** addressed and the high level of expertise of the scientific staff are **confirmed by the FCH's success in obtaining funding** to carry out research activities. During the period under review, this accounted for 33-42% of the faculty's total budget. During the period under review, an average of 60 research projects were carried out at the FCH each year. Given that an average of 61 academic staff (FTE) per year were involved in the scientific research activities during the period under review, this corresponds to approximately one project per academic staff member per year.

The main providers of grant funding to the FCH during the period under review were as follows:

- Czech Science Foundation, GAČR - prestigious basic research grants,
- Technology Agency of Czech Republic, TAČR - the main provider of industrial cooperation projects,
- Ministry of Industry and Trade of the Czech Rep., MPO - a major provider of industry collaboration projects,
- Ministry of the Interior (MV ČR), Ministry of Culture (MK ČR), Ministry of Health (MZdr ČR) and other ministries of the Czech Republic – ministries providing projects that address the specific needs of the state, e.g. security,
- HORIZON 2020 - the European Union's (EU) main science funding programme,
- INTER EXCELLENCE - EU programme for the participation of Czech scientific teams in global research structures,
- INTERREG - an EU instrument that strengthens cooperation between regions and countries within the EU,
- OP VVV - Operational Programme Research, Development and Education, which manages funds from the European Structural and Investment Funds.

²² For the definition of contract research for the purposes of evaluation in the HE segments, see Article 2.2.1 of the Community Framework for State Aid for Research, Development and Innovation 2014/C 198/01.

²³ Regardless of whether the projects are completed or still ongoing, provided that at least part of the project was implemented during the evaluation period.

²⁴ The evaluated unit shall only fill tables that are relevant to it.

Table 3.3.1 provides an overview of resources aggregated by provider.

Table 3.3.2 provides an overview of contract research activities above EUR 1 000. Smaller contracts are grouped under 'other'.

Here are selected examples of research projects carried out in the period under review:

Utilization of secondary raw material in geopolymers production - Geodust

(<https://cordis.europa.eu/project/id/734833>)

Funding source: HORIZON 2020 - MSCA

Years of realization: 2017-2022

Number of beneficiaries: 5

Total budget: EUR 558 000

Budget for the FCH: 209 000 EUR

This project aimed to solve the problem faced by many cement plants across Europe: the disposal of kiln dust. The project uses the waste material from these plants as a valuable source of KCl, free lime and dicalcium silicate and investigates the possibility of using them in alkali activated systems. The project focuses primarily on concrete, the properties of which are defined by European standards. The processes developed in the project enable the production of concretes that meet all the quality and property requirements for industrial application. The project consortium included universities and research organisations (FCH, Brno University of Technology as a project coordinator, Technical University of Ostrava, and Institute of Eduardo Torroja for construction Science-CSIS, Spain), by-pass kiln dust producer (Cemmac Inc., Slovakia) and large-scale producer of precast concretes (ŽPSV Inc.).

Demonstrative process for the production and chemical recycling of environmentally safe, superior bio-based packaging by plasma integration in the value chain; BioSupPack

(<https://cordis.europa.eu/project/id/101023685>)

Funding source: HORIZON 2020-Bio-based Industries (H2020-BBI)

Years of realization: 2021-2025

Number of beneficiaries: 17

Total budget: EUR 8 791 000

Budget for the FCH: EUR 378 650

Project description: BioSupPack is a European project funded by the H2020-BBI scheme, bringing together 17 academic and industrial partners across Europe. The project aims to demonstrate the technological and economic feasibility of producing microbial polyesters (PHA) from low-cost waste resources (brewery spent grains) and developing high-performance, bio-based packaging solutions.

The project takes a holistic approach, optimizing PHA-based formulations with a strong emphasis on renewable resources, upscaling conversion processes, and advancing post-consumer waste sorting and recycling through Industry 4.0 technologies. It also seeks to expand rigid packaging applications by tailoring material properties via advanced plasma technology and grafted coatings.

Plasma technology is integrated at three key stages: biomass pre-treatment, packaging production, and packaging waste pre-treatment. This enhances PHA yield, purity, and packaging performance, particularly improving oxygen and water barrier properties. It also boosts the effectiveness and efficiency of enzymatic recycling of PHA materials.

The project further aims to increase PHA recyclability by implementing a real-time monitoring system for selective separation, mechanical recycling of industrial scraps, and biological recycling of packaging waste. The recovered carbon sources can then be reused in fermentation feedstocks, ensuring an environmentally sustainable, circular approach.

Additionally, BioSupPack establishes a new value chain, including logistics and waste management for both brewery and packaging waste, aligning with industry needs and consumer awareness.

The FCH plays a key role in developing, optimizing, and scaling up PHA production from BSG, as well as investigating biological recycling through microbial biotechnology. In these efforts, FCH BUT collaborates closely with numerous partners but mainly with the Agricultural University of Athens (Greece) and ASA Spezialenzyme GmbH (Germany).

Permanent protection of touch screens to prevent the deposition of organic pollutants on their surface

(<https://starfos.tacr.cz/en/projekty/FW03010006?query=rrvaaadt3xq#project-main>)

Funding source: the Technology Agency of the Czech Republic (TAČR)

Years of realization: 2021-2024

Number of beneficiaries: 4

Total budget: EUR 1 182 880

Budget for the FCH: 187 200 EUR

The main objective of the project was to develop a polymer coating that would provide long-term protection of touchscreens against the deposition of organic contaminants on their surface, while at the same time preventing the deposition of hazardous micro-organisms, particularly bacteria and viruses. The aim was to raise the standard of hygiene when touch screens are used in public places. In parallel, the use of polymer systems with self-cleaning surfaces was developed for the surface treatment of highly exposed surfaces where there is a risk of contamination by organic pollutants and harmful micro-organisms. Two universities were involved in the project, with FCH playing a key role in the development of the material with antiseptic properties, the application technology and the development of the performance testing method. Based on the results of the project, the LOTUS Foil product was developed at FCH in collaboration with FORTES Interactive and is commercially available (<https://www.fortesinteractive.com/product/lotus-foil>). Its patent protection is being extended to the USA. This technology is described in more detail in chapter 3.4, which describes the results with existing of prospective impact on society.

Means for ballistic protection enhancement of vehicles and critical infrastructure

(<https://starfos.tacr.cz/en/projekty/FW01010021>)

Funding source: the Technology Agency of the Czech Republic (TAČR)

Years of realization: 2020-2024

Number of beneficiaries: 7

Total budget: EUR 3 895 000

Budget for the FCH: 300 600 EUR

The project focused on materials research and subsequent development of means for passive ballistic protection of critical infrastructure objects and vehicles for state security services such as the Army or Integrated Rescue System. The project focused on several strategies for ballistic protection, such as ultra-high performance cementitious composites, high-strength steel and aluminium alloys, advanced oxide and non-oxide ceramics, and high-strength hybrid laminates. The project results represent a complex solution for ballistic protection from both a material and structural point of view. FCH has played a key role in the development of new armour plating technologies. Other project participants include Bogges, Excalibur Army, Prototypa-ZM and the Military Research Institute and the Institute of Theoretical and Applied Mechanics of the CAS. As a very promising result of this project, the ballistic protection panel based on advanced fibre cement composite is further described in chapter 3.4, which describes the results with existing of prospective impact on society. Further reading on the results can be found here: [link](#).

National Centre of Competence - Polymer Materials and Technologies for the 21st Century (POLY-ENVI21)

(<https://starfos.tacr.cz/en/projekty/TN02000051?query=36zaaads7byg>,
<https://polyenvi21.cz/en/frontpage-english>)

Funding source: Technology Agency of Czech Republic (TAČR)

Years of realization: 2023-2028

Number of beneficiaries: 25

Total budget: EUR 15 896 000

Budget for the FCH: EUR 1 235 000

The National Centres of Competence programme supports the establishment and operation of research, development and innovation centres in advanced fields with high application and innovation potential and the prospect of significant contribution to the growth of the Czech Republic's industry. FCH is implementing two projects within this call. The first one is POLY-ENVI21. This project is based on the sustainable development agenda and the related 17 Sustainable Development Goals (SDGs). In collaboration with other partners, FCH is implementing several activities in this project: (i) activities to develop an environmentally friendly and low-cost polymer labelling system for digitised waste sorting, (ii) development of a technology to process sludge from plastics recycling to further recover by-products and increase the economic and environmental relevance of the process, (iii) nanofibre polymer materials with antimicrobial protection for applications in filtration technologies and surface treatment of plastic and mineral products for food, water, health and agricultural applications, (iv) development of a biodegradable polymer system for encapsulation of nitrogen fertilisers to ensure responsible management of agrochemicals, and (v) recycling of waste polymers from car batteries through mechanical and chemical recycling.

National Centre of Competence - Future Electronics for Industry 4.0 and Medical 4.0 (FEIM)

(<https://starfos.tacr.cz/en/projekty/TN02000067?query=xtdiaadatkyg>,
<https://feim.cvut.cz/>)

Funding source: Technology Agency of Czech Republic (TAČR)

Years of realization: 2023-2028

Number of beneficiaries: 23

Total budget: EUR 18 802 000

Budget for the FCH: 283 248 EUR

The second project of the National Centres of Competence Programme Call is the FEIM project. The main objective is to create a synergistic interdisciplinary cooperation between research and commercial companies with the aim of realising intelligent structures, components, sensors, modules and systems and connectivity with reduced production costs, high reliability and at the same time being competitive in global markets to meet the trends of Industry 4.0, Medical 4.0. In addition to other external partners, BUT faculties/departments (FCH, CEITEC, FEKT) are involved in the implementation. FCH is mainly working on the development of material printing technology for touch screen sensors. The new technology will enable the use of cheaper materials with a lower carbon footprint, reduce energy costs for production and, above all, increase production flexibility so that capacitive touch sensors produced in this way can be tailored to a specific end product. The industrial partners apply the results in their products for industry, offices, education, public institutions, the computer games industry and retail. The application of the FCH results will make a significant contribution to the introduction of information technology and artificial intelligence in industry and to the digitalisation of society, i.e. elements that reflect the technological and societal changes

associated with global megatrends, the concept of the Fourth Industrial Revolution and the requirements of sustainable development.

Biological functions and dynamics of PHA cycle in *Rhodospirillum rubrum*, as well as the related biotechnological consequences (BioPHArm)

(<https://starfos.tacr.cz/en/projekty/GF21-15958L?query=4kqiaads6kdq#project-main>)

Funding source: the Czech Science Foundation (GAČR) and Swizz Agency SNSF

Years of realization: 2021-2023

Number of beneficiaries: 3

Total budget: EUR 1 139 480

Budget for the FCH: 467 640 EUR

This project is an example of basic research. *Rhodospirillum rubrum* is a metabolically versatile bacterium studied for various biological mechanisms and biotechnological applications. It synthesizes polyhydroxyalkanoates (PHA)-biopolyesters stored as granules-that serve as a sustainable alternative to petrochemical plastics.

The BioPHArm project takes an interdisciplinary approach to understanding the PHA cycle-the interconnected metabolic processes of PHA biosynthesis and degradation-under different cultivation conditions. The project investigates gene expression changes, cellular morphology, biophysical properties, and stress robustness, as well as the impact of PHA metabolism on material properties. These findings are relevant both for fundamental science and for biotechnological applications using *R. rubrum* and related microbes.

Funded by the Czech Science Foundation (GAČR) and the Swiss Agency (SNSF), the project is led by the Swiss side. The consortium includes three research groups: Prof. Manfred Zinn's group (HES-SO, Switzerland) - specializing in advanced cultivation of *R. rubrum*. Prof. Obruča's group (FCH BUT, Czech Republic) - focusing on biochemical, biophysical, and morphological characterization, and evaluating stress robustness related to PHA metabolism. Assoc. Prof. Sedlář's group (FEEC BUT, Czech Republic) - responsible for bioinformatics analysis, particularly genomic and transcriptomic studies of *R. rubrum*.

The project has yielded valuable insights into PHA metabolism, leading to multiple publications. Notably, the Swiss side has extended the project until June 2025, and several additional publications are currently submitted or in the final stages of preparation for high-impact scientific journals.

Molecular energy harvesting materials: towards breaking the limits

(<https://starfos.tacr.cz/en/projekty/GA19-22783S?query=y4nqaadlvv5q#project-main>)

Funding source: the Czech Science Foundation (GAČR)

Years of realization: 2019-2021

Number of beneficiaries: 2

Total budget: EUR 397 720

Budget for the FCH: 177 120 EUR

This basic research project focused on the fundamental scientific objective of identifying the design patterns to significantly broaden the materials base that exhibit singlet fission and as such can be used in solar cells to overcome the Shockley-Queisser limit, i.e. the fundamental limit on power conversion efficiency. The project focused on the development of new chromophores that are air stable, highly absorptive, solution processable and potentially low cost, thus providing a suitable material for harvesting high energy photons for solar cells that exceed the efficiencies set by the single-threshold limit. The project was based on a multidisciplinary approach involving molecular design using quantum chemical calculations, organic synthesis and advanced characterisation of the singlet fission phenomenon and related properties. The FCH researchers have teamed up with

colleagues from the University of Pardubice who specialise in the synthesis of advanced organic molecules. The design and characterisation of the new compounds was the responsibility of the FCH. The project successfully achieved its goals, resulting in multiple publications in renowned journals.

Unravelling the role of polyhydroxyalkanoates in *Schlegelella thermodepolymerans* - a promising environmental bacterium for next generation biotechnology

(<https://starfos.tacr.cz/en/projekty/GA22-10845S>)

Funding source: the Czech Science Foundation (GAČR)

Years of realization: 2022-2024

Number of beneficiaries: 2

Total budget: EUR 487 320

Budget intended for the FCH: 285 280 EUR

Schlegelella thermodepolymerans is a thermophilic bacterium initially isolated for its polymer degradation capabilities. However, recent research has revealed its remarkable biotechnological potential within the Next-Generation Biotechnology (NGIB) framework. Beyond polymer degradation, *S. thermodepolymerans* produces polyhydroxyalkanoates (PHA)-microbial polyesters that serve as carbon and energy storage while enhancing stress resistance. Additionally, PHAs are considered a sustainable alternative to petrochemical plastics. This basic research project aimed to provide an in-depth understanding of *S. thermodepolymerans* PHA metabolism, particularly in relation to stress robustness. Key objectives included: i. constructing a detailed metabolic model; ii. developing and optimizing genome-editing tools; iii. evaluating its potential for PHA production, polymer biodegradation, and phenolic compound biotransformation.

Funded by the Czech Science Foundation, the project was led by Prof. Obruča (FCH BUT), responsible for biotechnological, biochemical, and polymer-related aspects. The team included Prof. Sedlář's group (FEEC BUT) - specializing in bioinformatics and systems biology. Assoc. Prof. David Šafránek's group (Faculty of Informatics, Masaryk University) - contributing to systems biology activities. Assoc. Prof. Pavel Dvořák's group (Faculty of Science, Masaryk University) - leading synthetic biology tasks.

The project successfully achieved its goals, resulting in multiple publications, with several currently under review. The knowledge, metabolic models, and gene-editing tools developed provide a strong foundation for further applied research, with follow-up projects already submitted to funding programs such as EIC Pathfinder.

Novel perovskites for hybrid photonic devices

(<https://starfos.tacr.cz/en/projekty/GA19-23718S?query=vrrqqaadgfgoa#project-main>)

Funding source: the Czech Science Foundation (GAČR)

Years of realization: 2019-2021

Number of beneficiaries: 1

Total budget: EUR 308 440

Budget for the FCH: 308 440 EUR

Perovskite materials are currently considered key to solar energy due to their high efficiency and low production costs. This is particularly important in the context of mitigating climate change. However, perovskites are increasingly being explored for other disruptive technologies such as neuromorphic electronics (memristors), photodetectors, etc. The aim of this project was to prepare novel perovskites and thin film structures with optimised properties for use in hybrid photonic applications. The properties of hybrid perovskites are strongly affected by ionic motion, which significantly reduces the operational stability, reliability and reproducibility of perovskite-based devices. Therefore, the basis for the preparation of novel materials was based on the detailed study of electron and ionic processes related to photogeneration, charge transport and recombination after optical or electrical

excitation. Fast electronic and slow ionic processes were studied using advanced methods based on impedance and current spectroscopy. The results were complemented by detailed chemical and structural analysis, including the influence of morphology on the dynamics of electronic and ionic processes. The stability of the perovskite systems and related degradation processes were studied in detail. Based on these results, novel optimised structures of the photonic materials with higher stability and optimised efficiency were proposed.

Table 3.3.1 Projects supported by public funds

In the role of beneficiary										
Provider ²⁵	Support (in thousands CZK/EUR) ²⁶									
	2019		2020		2021		2022		2023	
	tis. Kč	EUR	tis. Kč	EUR	tis. Kč	EUR	tis. Kč	EUR	tis. Kč	EUR
Horizon 2020	1 750	69 031	1 076	42 438	201	7 933	1 675	66 086	0	0
INTER EXCELLENCE	0	0	567	22 367	567	22 367	667	26 312	0	0
Foreign other	1 095	43 178	381	15 031	5	192	0	0	71	2 801
GAČR	13 806	544 625	14 386	567 505	17 979	709 248	11 830	466 677	9 687	382 130
TAČR	712	28 083	2 228	87 883	1 830	72 186	397	15 667	574	22 633
MMR ČR	0	0	9	359	200	7 882	82	3 237	0	0
MV ČR	1 294	51 031	0	0	0	0	0	0	0	0
COST	136	5 360	0	0	0	0	0	0	0	0
OP VVV	2 303	90 863	1 064	41 972	2 159	85 187	1 902	75 027	1 954	77 066
SoMoPro	1 806	71 240	718	28 340	0	0	0	0	0	0
VaV mobility	85	3 338	28	1 105	60	2 355	54	2 127	0	0
Institutional support for development	39 469	1 556 964	42 771	1 687 206	45 089	1 778 675	51 725	2 040 419	49 725	1 961 540
Specific research	7 650	301 762	6 803	268 343	8 152	321 561	7 576	298 866	8 175	322 484
Total	70 105	2 765 475	70 031	2 762 548	76 242	3 007 585	75 908	2 994 417	70 185	2 768 654
In the role of another participant										
Provider ²⁷	Support (in thousands CZK/EUR)									
	2019		2020		2021		2022		2023	
	tis. Kč	EUR	tis. Kč	EUR	tis. Kč	EUR	tis. Kč	EUR	tis. Kč	EUR
Horizon 2020	0	0	0	0	809	31 904	2 461	97 098	720	28 408
INTERREG	311	12 251	1 932	76 222	2 317	91 392	259	10 231	0	0
Foreign other	792	31 237	0	0	123	4 872	110	4 323	102	4 004
GAČR	0	0	0	0	0	0	0	0	2 213	87 298
TAČR	3 645	143 781	9 288	366 410	12 440	490 728	11 975	472 375	16 042	632 809
MPO ČR	17 917	706 780	15 578	614 529	11 593	457 309	6 353	250 598	0	0
MV ČR	0	0	0	0	966	38 099	960	37 882	0	0

²⁵ If the provider is from abroad, please indicate the provider's country of origin in brackets.

²⁶ Indicate the total amount expressed in thousands of CZK and the conversion of the total amount into Euro.

²⁷ Ibid.

MZdr ČR	337	13 294	0	0	0	0	0	0	0	0
OP PIK	2 002	78 957	724	28 570	3 266	128 851	2 955	116 563	814	32 125
OP TAK	0	0	0	0	0	0	0	0	269	10 621
Total	25 003	986 300	27 523	1 085 731	31 514	1 243 155	25 073	989 070	20 160	795 265

Table 3.3.2 - Contract research activities

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)									
		2019		2020		2021		2022		2023	
		thous. CZK	EUR	thous. CZK	EUR	thous. CZK	EUR	thous. CZK	EUR	thous. CZK	EUR
ABB s.r.o.	Materials research	16	636	42	1657	99	3900	59	2354	82	3260
ABNER a.s.	Steel Research	12	477	0	0	12	490	86	3402	13	510
ADM, a.s.	Composite research	0	0	88	3456	0	0	97	3834	4	154
AGRO Liboměřice a.s.	Research on soil substances	29	1 138	0	0	0	0	0	0	0	0
AL INVEST Břidličná, a.s.	Research on paint adhesion	0	0	0	0	73	2 882	0	0	0	0
Algae Farm s.r.o.	Biological process research	0	0	0	0	413	16 292	0	0	0	0
Institute of Archaeology of the CAS,	Research of archaeological finds	0	0	40	1 596	0	0	0	0	0	0
ASIO TECH, spol. s r.o.	Stormwater research	0	0	0	0	240	9468	240	9468	230	9073
Association of Building Alternatives	Building materials research	53	2 071	0	0	0	0	0	0	0	0
Astotec Automotive	Hg detection research	56	2 189	0	0	0	0	0	0	0	0
BOGGES, spol. s r.o.	Research on ceramic and metallic materials	109	4260	0	0	0	0	0	0	0	0
BOCHEMIE a.s.	Biopolymer research	2 483	97 929	0	0	0	0	0	0	0	0
Brněnské vodárny a kanalizace, a.s.	Sludge research	0	0	34	1 357	0	0	0	0	0	0
Cement Hranice, a.s.	Cement research	0	0	0	0	0	0	33	1302	44	1740
Cemex Czech Republic s.r.o.	Research on cementitious materials	29	1144	24	932	0	0	19	730	55	2178
CEMMAC a.s. (SK)	Research on the hardening retardation of cements	0	0	0	0	122	4821	412	16235	0	0
Centre for Applied Research	Surface research	190	7495	48	1893	104	4103	38	1491	0	0
Czech Geological Survey	Research on the mineral fluorine	0	0	33	1 302	0	0	0	0	0	0
Czech Welding Institute s.r.o.	Welding materials research	0	0	0	0	85	3365	284	11209	66	2604
ČEZ Energetické produkty, s.r.o.	Energy materials research	123	4846	188	7432	139	5477	191	7544	176	6923

²⁸ If the contracting authority is from abroad, please indicate in brackets the country of origin of the contracting authority.

DAKO-CZ, a.s.	Materials research	0	0	0	0	0	0	0	42	1656
DIAMO, state enterprise	Lime research	0	0	17	663	18	698	55	2146	0
ECOS Choceň s.r.o.	Research on PUR materials	45	1 771	0	0	0	0	0	0	0
EKO-KOM, a.s.	Research on coatings	398	15 716	0	0	0	0	0	0	0
ESB Switchboards, a.s.	Corrosion resistance research	0	0	50	1 953	0	0	0	0	0
European Detention Institute	Research on the influence of soil substances	245	9 673	0	0	0	0	0	0	0
Fibertec Steti s.r.o.	Research on anticorrosive papers	40	1546	300	11834	0	0	0	0	0
FK system - surface treatment,	Steel surface treatment research	0	0	280	11 045	0	0	0	0	0
Flexcraft s.r.o.	Composition research	0	0	0	0	0	0	0	81	3 195
Fosfa a.s.	Research on solutions	65	2568	22	880	0	0	20	773	0
GMP Europe s.r.o.	Materials research for automotive	0	0	0	0	0	0	0	400	15 779
Hanon Systems Autopal s.r.o.	Automotive materials contamination research	38	1 481	0	0	0	0	0	0	0
HARTMANN - RICO a.s.	Research on adhesives and films	25	994	0	0	41	1620	141	5570	0
Heidelberg Materials CZ, a.s.	Cement research	264	10399	262	10317	328	12944	853	33656	871
Huhtamaki Czech Republic, a.s.	Packaging research	32	1 278	0	0	0	0	0	0	0
Chemservis spol. s r.o.	Materials research	0	0	0	0	0	0	0	360	14 201
IFE-CR,a.s.	Research on steels and surfaces	78	3086	51	2000	100	3948	60	2327	86
IMI International s.r.o.	Metal Materials Research	0	0	0	0	15	590	0	0	16
ITW PRONOVIA, s.r.o.	Lubricant research	10	402	73	2886	14	533	38	1506	26
JOANNEUM RESEARCH Forschungsgesells (AT)	Plasma surface treatment research	0	0	0	0	20	808	10	386	0
JTEKT Bearings	Bearing research	0	0	0	0	30	1 183	0	0	0
KÄSTLE CZ, a.s.	Research on the corrosion resistance of steel	10	398	26	1022	0	0	0	0	0
Kingspan Inc.	Research on thermal insulation materials	1 290	50 888	0	0	0	0	0	0	0
KP - KOPRO s.r.o.	Injection mould research	350	13 807	0	0	0	0	0	0	0
LANIK s.r.o.	Research on ceramic materials	0	0	111	4 389	0	0	0	0	0
LENOX INDUSTRY a.s.	Ferroalloy research	26	1 008	0	0	0	0	0	0	0
M+H, Miča a Harašta s.r.o.	Cosmetic product research	0	0	0	0	0	0	0	214	8 456

MAG 45 s.r.o.	Research on stress corrosion	20	775	60	2347	46	1811	0	0	109	4290
Masaryk University	Material printing research	166	6527	0	0	0	0	0	0	0	0
Mendel University in Brno	Nanomaterials research	51	2017	48	1902	55	2166	49	1913	0	0
Miloš Šubert	Materials research	0	0	0	0	0	0	0	0	105	4 142
NAFIGATE Corporation, a.s.	PHB bioplastics research	2200	86785	1600	63116	0	0	0	0	0	0
Nanopharma, a.s.	Research on face masks	47	1855	74	2899	0	0	0	0	0	0
Nobilis Tilia s.r.o.	Research on Nobilis creams	400	15779	0	0	0	0	0	0	200	7890
ON SEMICONDUCTOR CZECH	Semiconductor materials research	0	0	38	1 491	0	0	0	0	0	0
ORKLA ASA (NO)	ORKLA recycling research	0	0	0	0	388	15 296	0	0	0	0
ORLEN Unipetrol RPA s.r.o.	Fuel research	0	0	0	0	0	0	0	0	43	1714
OTK GROUP, a.s.	Photosensitive sensor research	80	3 156	0	0	0	0	0	0	0	0
P-D Refractories CZ a.s.	Research on refractories	44	1 751	0	0	0	0	0	0	0	0
Pepper - Decor s.r.o.	Research on paint adhesion	0	0	0	0	46	1 815	0	0	0	0
PFNonwovens Czech s.r.o.	Fabric research	0	0	0	0	0	0	0	0	30	1 183
Philip Morris ČR a.s.	Tobacco industry substance research	0	0	0	0	0	0	50	1972	300	11834
PLASMAMETAL, spol. s r.o.	Research on hot spraying	185	7306	829	32694	103	4068	0	0	946	37355
PRECHEZA a.s.	Research on gypsum materials	100	3925	0	0	86	3393	41	1627	100	3945
Progres Ekotech, s.r.o.	Research on metallurgical waste recycling	0	0	0	0	0	0	0	0	26	1 023
Prototypa-ZM, s.r.o.	Ballistic Materials Research	0	0	0	0	0	0	20	789	20	804
PYROTEK CZ, s.r.o.	PYROTEK Materials Research	0	0	89	3513	81	3184	15	596	20	791
Remarkplast s.r.o.	Plastic materials research	0	0	0	0	0	0	97	3 813	0	0
RNDr. Vladimír Obšel, CSc.	Materials research	0	0	0	0	0	0	0	0	30	1 183
SAINT-GOBAIN ADFORS CZ, s.r.o.	Research on the phase composition of materials	97	3813	71	2781	18	726	0	0	0	0
Saint-Gobain Construction	Building materials research	0	0	0	0	480	18 935	0	0	0	0
SAKO Brno, a.s.	Pollution research	0	0	0	0	0	0	21	840	15	599
SHM, s. r. o.	Research on PVD coatings	0	0	0	0	0	0	0	0	180	7 101
SChem a.s.	Water glass research	314	12 369	1 728	68 167	0	0	0	0	0	0
SCHOTT CR, s.r.o.	Gold research	0	0	0	0	25	953	20	785	0	0
Skanska a.s.	Research on concretes	0	0	0	0	25	986	557	21991	0	0

HEUNISCH Brno Foundry, s.r.o.	Research on nitrogen determination	31	1213	31	1213	31	1213	0	0	0	0
Stoba Precision Technology s.r.o.	Metal parts research	15	604	14	533	41	1624	10	402	10	403
ŠKODA AUTO a.s.	Metal Materials Research	58	2278	0	0	22	878	0	0	0	0
ŠKODA TRANSPORTATI ON a.s.	Materials research for automotive	0	0	0	0	179	7 076	0	0	0	0
TDK Electronics s.r.o.	Ferrite research	140	5523	194	7631	202	7962	42	1651	56	2204
TE Connectivity Czech s.r.o.	Contact surface treatment research	13	496	12	491	81	3180	91	3563	79	3159
Technika budov, s.r.o.	Materials research	0	0	0	0	0	0	0	0	46	1 800
Technology Centre a.s.	Materials research	0	0	0	0	0	0	23	888	22	878
Teplárny Brno, a.s.	Surface research	0	0	59	2 324	0	0	0	0	0	0
Teva Czech Industries s.r.o.	Research on dosage forms	0	0	0	0	113	4468	0	0	0	0
Thermo Fisher Scientific	Research on analytical tablets	1 097	43 256	1 363	53 750	1 839	72 509	1 931	76 188	2 287	90 194
THK RHYTHM AUTOMOTIVE GmbH (DE)	Development of materials for bearings	0	0	0	0	0	0	0	0	31	1 228
TOPCORE service s.r.o.	Research on dextrin adhesives	0	0	0	0	0	0	400	15779	490	19329
TRAIVA, s.r.o.	Research on silica gels	0	0	14	568	0	0	0	0	13	521
TRS Préverenges (CH)	Tyre recycling research	0	0	0	0	48	1 891	0	0	0	0
TryMee Clothing s.r.o.	PLA recycling research	0	0	0	0	160	6 325	0	0	0	0
Tyre Recycling Solutions SA (CH)	Tyre research	46	1 801	0	0	0	0	0	0	0	0
Charles University	Fluorescent materials research	84	3 314	0	0	0	0	0	0	0	0
Tomas Bata University in Zlín	Research on nanocomposites	0	0	45	1793	52	2069	45	1793	45	1793
Urdiamant, s.r.o.	Research on abrasive layers	50	1972	11	418	225	8875	0	0	0	0
Institute of Polymers of the Slovak Academy of Sciences, v.v.i. (SK)	Development of polymer materials	0	0	0	0	0	0	44	1 726	0	0
Institute of Global Change Research of the CAS,	research	45	1 761	0	0	0	0	0	0	0	0
Central Inspection and Testing	Research on the determination of drugs	0	0	140	5542	190	7495	0	0	165	6520
VIA ALTA a.s.	Research on pH dynamics	0	0	157	6205	278	10935	0	0	0	0
VUP Medical, a.s.	Hydrogel research	37	1473	18	704	18	704	24	953	41	1633
University of Mines	Copper surface research	8	323	24	935	0	0	0	0	0	0

Research Institute of Building Materials, a.s.	Research on inorganic binders	584	23018	664	26193	61	2391	160	6311	30	1183
WERBA-CHEM GmbH (AT)	Research on kaolins	20	789	0	0	15	592	58	2271	74	2901
ZERA - Agricultural and Ecological	Soil composition research	29	1 156	0	0	0	0	0	0	0	0
ZLKL, s. r. o.	Research on mechanical properties of surfaces	0	0	0	0	43	1694	25	991	0	0
ŽPSV s.r.o.	Research on cements and concretes	28	1 112	0	0	0	0	0	0	0	0
Other	Contracts < EUR 1 000	85	3579	128	5149	255	10121	106	4235	158	6073
Total		12 090	476 926	9 100	358 973	7 059	278 457	6 465	255 010	8 437	332 835

Note: List and describe contract research activities with a revenue in a given calendar year, regardless of the amount of financial revenue.

3.4 Research results with existing or prospective impact on society

The evaluated unit shall briefly comment on a maximum of 10 (considered most significant by the evaluated unit) research results already applied or realistically heading towards application during the period of 2019–2023, based on the overview annex table 3.4.1 (it is recommended to indicate results with a link to projects listed in indicator 3.3). The evaluated unit must demonstrate in its description that the research results have led or will soon lead to positive impacts²⁹, on society (e.g. description of how the results are used by various users, the range of persons/institutions for which the result is relevant, measurable economic impacts, etc.). The evaluated entity shall indicate in its commentary whether the gender dimension is considered in these results and discuss the impacts of the results regarding sustainability.

Maximum range 300 words/result.

Self-assessment:

As can be seen from the portfolio (Table 3.1.6), FCH is mainly oriented towards natural sciences (group 1. Natural Sciences, 60%) and less towards applied disciplines (group 2. Engineering and Technology, 40%). Measured in terms of the faculty's scientific research output, the ratio of basic to applied research is about 75:25. However, **FCH has collaborated with dozens of industrial companies and has produced a number of outputs with potentially significant impact on society.** In line with its vision - to focus on addressing societal needs - the impact of these outputs is mainly in areas such as circular economy, use of secondary resources, recycling, etc. In addition to these themes, FCH also works on security-related issues, both in the field of health and in the development of materials and technologies for defence purposes.

We also consider the fact that the FCH carried out **over 340 research contracts** with a total volume of almost CZK 42 million, i.e. over EUR 1.6 million, in the period under review to be a **significant contribution** of activities with an industry **with a direct impact on society** (see Table 3.3.2). These contracts have contributed to solving problems and to the future development of dozens of **companies employing tens of thousands of people**. Despite the fact that we are a small faculty (87 FTE research staff on average) and the primary focus is on basic research.

Selected results of applied research with a significant impact on society:

Ballistic protective panel (utility model, 2019, <https://www.zvut.cz/en/ideas-discoveries/ideas-and-discoveries-f38103/ballistic-panel-from-fch-to-increase-security-of-critical-infrastructure-in-the-czech-republic-d241507>)

The ballistic panel is based on an advanced fibre-reinforced cement composite that is able to resist the penetration of small calibre projectiles. The societal benefits of this result are enormous given the current security situation in Europe. European countries are now exposed to an increased risk of terrorist sabotage activities, particularly against critical infrastructure such as electricity, gas and water facilities, IT infrastructure, defence and security installations and government control facilities. There is a growing need for increased ballistic protection, especially at the entrances and critical elements of these facilities. In many locations, it is not possible to install large concrete barriers or build permanent concrete elements. Modular, mobile barriers or permanent wall linings of existing buildings, consisting of smaller panels, are most advantageous. Combined with the protective properties of the masonry itself, the panel provides at least level A3 protection in accordance with STANAG 2280, equivalent to multiple hits with a 7.62mm x 54R (Dragunov) API penetrating projectile. Until now, ballistic panels based on high quality cement composite have not been available on the market to replace the very expensive homogeneous rolled steel panels. Therefore, this utility model

²⁹ See Terms definition.

brings a completely new possibility of increasing the ballistic protection of objects both on the Czech and on the global market, where it allows to reduce the costs in comparison with steel armour to one fifth with the same panel weight and efficiency.

At present, the application possibilities of the ballistic panel are being developed with Athex Technology s.r.o. in their mobile protection systems, in which the Czech Army has already shown interest. An Athex-designed mobile ballistic protection system equipped with FCH BUT ballistic panels will be exhibited at IDET in 2025. At the same time, other mobile protection projects are being prepared with Athex Technology Ltd. These are based on the needs of the Czech Armed Forces.

Self-adhesive film with a photoactive layer exhibiting self-cleaning properties (utility model, 2023 (<https://lotusfoil.com/>, <https://www.fortesinteractive.com/product/lotus-foil>))

The utility model addresses a societal need, acquired after the Covid 19 pandemic, to touch only safe surfaces. The result allows touchscreens to be equipped with a removable film with antibacterial and antiviral properties. Based on the synergistic effect of EU-approved biocides at extremely low concentrations and photogenerated singlet oxygen, a self-adhesive film with an active layer that reacts to visible light irradiation has been produced which, together with the biocides, keeps the touchscreens at a very low population of micro-organisms. The active layer is printed onto the polymer film. The result was put into production before the end of the project in 2024. Currently, the product has started to be manufactured under the direction of the principal investigator, Fortes interactive, Ltd.

The films have been tested under real-life conditions in fast food outlets, supermarkets and airports. They are currently being used by DM Drugstore to protect screens at self-service checkouts. The product is also being considered for use in hospitals. Here, visitors touch the call systems, for example, and may be exposed to a higher risk of infection.

In tests, the foils have proven to be extremely durable - they can withstand up to 30,000 touches with a woman's artificial nail. It is also easy to maintain. The films can be wiped clean with disinfectant and a microfibre cloth, while the low adhesion self-adhesive layer allows for easy removal.

This utility model was followed by protection of the technology in the form of patent number 310209 (Czech Republic), and a patent application has been filed in the USA. Due to its ease of application, high durability and wide range of applications, the film has the potential to become the standard for touchscreen protection worldwide. Participants in the project were the Faculty of Chemistry of the Brno University of Technology, SYNPO, a.s. and Tomas Bata University under the leadership of Fortes Interactive, s.r.o. FCH played a key role in the development of the photoactive system generating singlet oxygen and the material printing for coating on the substrate film.

Biotechnological processing and valorization of waste glycerol by carotenogenic yeasts (verified technology, 2023)

The result is a verified technology for the production of enriched yeast biomass using the carotenogenic yeast *Rhodotorula toruloides* as the main substrate, using waste glycerol, a by-product of biodiesel production. This technology enables the efficient processing of waste feedstock and its conversion into a high value-added biomaterial. The technology is fully in line with the principles of circular economy as it uses industrial waste as a feedstock, thus contributing to reducing the environmental burden and promoting sustainability.

The originality of the technology lies in the combination of biotechnological processes with the use of the yeast *Rhodotorula toruloides*, which is able to grow on various substrates, including waste. This strain was selected on the basis of screening experiments as optimal for the production of biomass rich in carotenoids, lipids, proteins and other valuable metabolites. This innovative combination of

yeast and substrate produces biomass with a wide range of applications, from dietary supplements to feed additives, cosmetics and pharmaceuticals.

The technology was developed at the Faculty of Chemistry of Brno University of Technology in cooperation with the biotechnology company Algae Farm, s.r.o., which is part of the Czech investment holding WARHOLD fund SICAV a.s. The company has adopted the technology for commercial use and has already started industrial production of biomass on a large scale. Large-scale cultivation was carried out in cooperation with the Algatech centre in Třeboň, where the technology was successfully applied in a 2000 litre reactor.

Biomass produced by this technology is characterized by high content of beta-glucans (12-17%), carotenoids (7-10 mg/g), ergosterol and other minor metabolites with proven antioxidant and immunomodulatory effects. Products from this biomass, such as LiveLin and AnimaLin, are already available on the market and represent innovative natural food supplements and feeds that do not contain any additives.

The construction of a specialised biotechnology plant in Buku near Příbram is currently underway, where the technology will be fully implemented. This project represents a significant investment in the development of biotechnology in the Czech Republic and the technology has a high potential for expansion to European and global markets.

Production of polyhydroxyalkanoates employing thermophilic bacterial isolate *Aneurinibacillus* sp. H1 (patent, 2020)

The content of the patent is the protection of a very promising bacterium *Aneurinibacillus* sp. H1. This strain was isolated in a special way from compost and is stored in the Czech Collection of Microorganisms (CCM) under collection number 8960. It is a gram-positive thermophilic bacterium with an optimum growth temperature in the range of 45-50°C. The main technologically important feature of this bacterium is its ability to produce polyhydroxyalkanoates (PHAs), microbial polymers that represent a very promising alternative to petrochemical plastics. Unlike synthetic materials, PHAs are entirely natural in origin and are also completely biodegradable and biocompatible. The bacterium *Aneurinibacillus* sp. H1 in particular is a very interesting producer of PHAs, with the very important advantage of its thermophilic nature - the high cultivation temperature makes the biotechnological process less demanding with regard to contamination. This makes it possible to reduce the demands and costs of maintaining aseptic conditions. In addition, the thermophilic nature of the PHA production process using *Aneurinibacillus* sp. H1 reduces the major energy costs associated with cooling the process. Another advantage of the bacterium is its gram-positive nature. This eliminates the contamination of PHA with endotoxins, the main contaminants of PHA originating from the cell wall of gram-negative bacteria, which greatly complicate the application of PHA in biomedical applications.

However, the main biotechnological advantage of the bacterium is its unique flexibility with respect to the composition of the synthesized polymer - the bacterium is able to incorporate other monomers such as 4-hydroxybutyrate or 4-hydroxyvalerate into the polymer structure very efficiently. The resulting copolymers have very interesting material properties, also due to their application in high added value areas such as cosmetics or health care.

Discussions are currently underway to purchase a license to the patent in question. The company Nafigate s.r.o. was seriously interested, however, the negotiations that led to an agreement between the BUT and a commercial entity have been suspended for the time being due to economic problems and the related change in the company's priorities. Currently, the BUT is also intensively looking for another commercial partner to take over the patent by way of a license.

Technological line for the separation of photovoltaic panels (utility model, 2023)

The development of a technology line for the separation of photovoltaic panels represents a major advance in waste management and renewable technologies. With the growing installation of PV systems worldwide, the number of panels reaching the end of their useful life is increasing, creating a need for scalable and efficient recycling solutions. In the Czech Republic, approximately 5-8 tonnes of panels need to be recycled every day, demonstrating the growing importance of PV panel recycling solutions. In the future, the complete recycling and reuse of these valuable materials will be a prerequisite for a sustainable energy sector.

The Utility Model is a complex recycling line that enables the efficient separation of individual materials such as glass, aluminium frames and wafer components. Using conventional technologies that can be easily adapted to industrial conditions, the line enables the recycling of valuable materials from panels at the end of their life cycle. A key element is the thermal decomposition process, which allows the removal of the polymer layers that bond the glass to the wafer. This process provides a more thorough separation of components than current mechanical methods. In addition, vibrating screens are used to separate the glass according to particle size, allowing it to be reused in other industrial applications.

A unique aspect of the solution is the extrusion of materials from wafers into tablets, which are then used in aluminium alloying processes. These tablets, which contain up to 50% wafer material, represent a new way of using materials that were previously considered non-recyclable. This innovative process reduces the need for primary raw materials and promotes a circular economy approach in both the photovoltaic and metallurgical sectors. The proposed system is capable of achieving recycling rates of up to 95%. The possibilities of applying the recycling line in practice are currently being explored together with VIA ALTA, with whom the recycling line was developed. With the increasing legal requirements for recycling, it is expected that this knowledge will be put into practice in 2025-26.

Table 3.4.1 - Overview of research results in the period under evaluation

Type of result ³⁰	Year of application	Name
Utility Model	2019	Ballistic protective panel
Utility Model	2023	Self-adhesive film with photoactive layer with self-cleaning properties
Verified technology	2023	Biotechnological processing and valorisation of waste glycerol by carotenogenic yeasts
Patent	2020	Production of polyhydroxyalkanoates employing thermophilic bacterial isolate <i>Aneurinibacillus</i> sp. H1
Utility Model	2023	Technological line for the separation of photovoltaic panels

Note 1: Please list and describe the results already applied in practice or heading towards application in practice with existing or prospective impact on the society (e.g. domestic or foreign patents, sold licenses, spin-offs, prototypes, varieties and breeds, methodologies, significant analyses, surveys, expert outputs for policymaking or other forms of non-publication outputs, etc.). Indirect results of research, development and creative activities with documented societal impact, e.g. expert activities, services to the public/government/scientific community, may also be reported.

³⁰ Specify the specific type of result. Add rows as needed.

TRANSFER OF RESULTS INTO PRACTICE

3.5 Transfer of results into practice

The evaluated unit shall briefly describe its system for transferring results into practice. It shall also indicate up to five of the most typical users of its results, whether in the university environment or in the non-university application/corporate sphere, detailing how it collaborates with them and how it seeks out new users (using a maximum of five specific examples).

It will also indicate whether and how it commercialises R&D&I results (e.g. selling licences, setting up start-up or spin-off companies, etc.)³¹, providing brief description of the commercialisation methods used. The effectiveness of the transfer of results and the commercialisation of R&D&I results will be described using a selection of results (max. five) listed in annex table (Table 3.4.1).³²

Additionally, the evaluated unit shall briefly comment on the funds received during the period of 2019–2023 from non-public, non-grant sources (e.g. licences sold, spin-off revenues, donations, etc.). A full summary shall be provided in annex table (Table 3.5.1).

Maximum 500 words plus 200 words for each provided example of finding a new user of results and commercialization.

Self-assessment:

Knowledge transfer at BUT operates on two levels. The central level, where the agenda is provided by the Rectorate's Knowledge Transfer Department, and the faculty level, where the agenda is provided by the Knowledge Transfer Managers and Authorised Persons. The Rectorate's department serves as a contact point for the business community, the state administration, professional associations and others. It has a methodological, support and coordination function for the Knowledge Transfer Managers and Authorised Persons at the faculties and units of the BUT.

At the FCH, the methodology of knowledge transfer is defined in the internal regulation of the Dean's Directive - "Knowledge Transfer at the FCH BUT", which defines the rules of procedure for the registration, protection and use of intellectual property, in particular the results of science, research and development generated at the FCH.

Knowledge Transfer Manager:

- ✓ Participates in the financial management, controls them and assesses the associated risks.
- ✓ Monitors R&D results, evaluates the commercial potential.
- ✓ Provides support, advice and training.
- ✓ Manages commercialisation cases, identifies industrial partners, organises meetings and networking.
- ✓ Develops and updates commercialisation plans.
- ✓ Advises on the implementation of standards.
- ✓ Designs marketing documents.
- ✓ Manages the activities of authorized person responsible for administration.

At FCH, scientific and research results are mainly commercialised through licensing (patents, utility models, proven technologies, functional samples) and contract research, which involves selling know-how to solve specific industrial problems. During the evaluated period, FCH had 53 protected results; one invention awaits a Czech Patent Office decision and another is being reported by BUT. Two inventions are undergoing European patent validation. Some of the results have been commercialized in the last decade in the form of licenses with a total value of approx. 950k CZK (approx. 37,500 EUR).

³¹ In the case of military HEIs, their specific position is taken into account when evaluating the commercialisation/evaluation of R&D&I results.

³² If the commercialisation of R&D&I results is carried out in this way.

It is expected that spin-off company will be established in 2025–26 - consultations are currently underway regarding the use of know-how in the field of ballistic protection.

Non-public, non-grant sources of funding (Table 3.5.1) included the sale of licences, e.g. to a producer of ecological adhesives, which produces thousands of tonnes of adhesive per year and exports to more than 12 European countries (TOPCORE service s.r.o. <https://www.topcoreservice.com/>), paid training courses for employees of industrial companies, especially in the field of surface protection by hot spraying in the nuclear power industry, but also a course in sensory analysis, as well as expert opinions, e.g. in connection with the environmental accident that caused the poisoning of the Bečva River, corrosion of water management structures (SPO spol. s.r.o.), etc. Among the non-grant, non-public funds received by FCH, donations from companies such as TEVA, MERCI, Synthon, FORTES, Colonia press, Kores, TOP-CORE, Mlýny Voženílek and others make a significant contribution. The financial donations are used for targeted support of R&D activities, mainly focused on applied research, support of research teams, purchase of equipment and other needs for research activities; financial donations are also used for organising student competitions and popularisation of chemistry.

Selected examples of the commercialization processes (see also <https://www.fch.vut.cz/en/rad/achievements/results>):

Ballistic protective panel

The idea came from basic research carried out as part of Ondřej Koutný's PhD thesis on ballistic resistant concretes, who has been working for Bogges since completing his PhD. His thesis opened up the topic of developing a material based on ultra-high-strength fibre-reinforced concrete (UHPFRC) with increased ballistic resistance, along with the question of the methodology for designing and testing the formulation. The long-term research work culminated in the joint project "Means to increase ballistic protection of vehicles and critical infrastructure" (see chapter 3.3) with Bogges. This project has shown that it is possible to achieve the parameters needed to meet the standards of armies including NATO. Subsequently, a search for possible partners was initiated to commercialise the developed technology.

This topic was offered to Athex Technology s.r.o., for whom FCH was developing the design of mobile systems for explosive environments. In cooperation, mobile protection systems were subsequently constructed, in which the Czech Army has already shown interest. An Athex-designed mobile ballistic protection system equipped with FCH BUT ballistic panels will be exhibited at IDET in 2025. At the same time, other mobile protection projects are being prepared with Athex Technology Ltd. These are based on the needs of the Czech Armed Forces.

Self-adhesive film with photoactive layer with self-cleaning properties

The idea to develop this technology came from Fortes Interactive, with whom we started our cooperation in the development of capacitive sensors for touchscreens. During the covid 19 pandemic, it became apparent that these displays could be a source of infection and some protection needed to be developed. We were awarded a joint project on Permanent protection of touch screens to prevent the deposition of organic pollutants on their surface (<https://starfos.tacr.cz/en/projekty/FW03010006>), using previous basic research results at FCH on self-cleaning surfaces. In this way, it was possible to achieve a high technological level (TRL7) and immediately during the project a commercial product was created, which Fortes Interactive sells and will expand to the American market (see chapter 3.4 for more details).

Biotechnological processing and valorisation of waste glycerol by carotenogenic yeasts

This product has been developed in collaboration with Alge farm, a company specialising in the development of research and production biotechnologies in the field of nutritional supplements. Based on the many years of research carried out at FCH and the resulting publications, our researchers were asked to test the possibility of biotechnological production of enriched yeast biomass using the

yeast strain used by Algae Farm. Due to the long background research at FCH, a different strain was eventually selected for the technology and the technology was successfully developed. The company has adopted the technology for commercial use and has already started industrial production of biomass on a large scale.

Technological line for the separation of photovoltaic panels

This work was carried out in collaboration with VIA ALTA, a company specialising in the development of advanced technical and technological solutions for waste recycling. On the basis of previous cooperation between FCH and this company in the framework of research contracts, a project was submitted for the development of a recycling line for photovoltaic panels. VIA ALTA is currently looking for a suitable investor among its partners in the recycling sector to build the line. With increasing legislative requirements for recycling, it is expected that this knowledge will be put into practice in 2025-26. In 2025 it is planned to present the line at several exhibitions, fairs and forums that focus on recycling processes.

Description of 5 users of the results:

ČEZ Energetické produkty, s.r.o. (CEZ EP) (<https://www.cezep.cz/en/about-us>)

Long-term cooperation in the field of large-scale energy raw material production, processing and storage. Projects for the recycling of already stored materials are currently being planned. The collaboration is conducted on a commercial basis as contract research, and the total value of the collaboration has exceeded EUR 6 million. FCH staff have been involved in the implementation of measures that are now in operation. FCH also works with CEZ EP as a partner in the submission and resolution of projects funded by various providers.

TOP-CORE s.r.o. (<https://www.topcoreservice.com/>)

There is a long-term cooperation with TOP - CORE in the development of industrial adhesives intended mainly for paper bonding (production of industrial cavities). The cooperation is mainly based on joint grants (projects worth more than CZK 12 million / EUR 473 thousand), but also on contract research. Since 2020, the FCH has received financial compensation for the use of knowledge resulting from project cooperation. In the past, the amounts were in the tens of thousands per year, but in 2025 we expect to exceed the 100,000 CZK/4,000 EUR.

Cement plants (Heidelberg materials, Cemex)

FCH cooperates with cement producers throughout the Czech Republic. The cooperation is mainly on a commercial basis in the form of contract research, but also in the form of joint research projects. The main topics are carbon dioxide emission reduction, alternative low-emission cements, alternative fuels and kiln linings. The total volume of contract research with cement producers has long been in the range of CZK 0.5-1 million / EUR 20-40 thousand per year.

Thermo Fisher Scientific Brno s. r. o. (<https://jobs.thermofisher.com/global/en>)

We cooperate with Thermo Fisher Scientific Brno s.r.o. on the basis of contract research. FCH employees participate in the development of standards and standardization methods for various analytical instruments supplied by this company worldwide within the framework of contractual research activities. The volume of contract research is regularly in the range of CZK 1-2 million / EUR 40-80 thousand per year.

PLASMAMETAL, spol. s r.o. (<https://en.plasmametal.cz/>)

Cooperation with PLASMAMETAL, spol. s r.o. is mainly based on contract research, the annual volume of which reaches up to CZK 1 million / EUR 40 thousand. Plasmametal is a leader in the field of hot spray coatings, which FCH develops and tests for them.

Table 3.5.1 - Summary of non-public revenues received during the period under evaluation

Type of revenue	Revenue (in thousands CZK/EUR)				
	2019	2020	2021	2022	2023
Sale of licenses					1/50
Paid training courses for employees of application entities			113/525		75/2963
Expert opinions		66/2591	117/4620		31/1215
Donations - non-investment - financial - R&D	840/33155	725/28615	1114/43936	644/25403	366/14456
Donations - non-investment - in-kind - R&D	15/592				
Total	855/33747	791/31206	1244/49080	644/25403	474/18683

Note: Enter funds raised for R&D&I from non-public sources besides grants or contract research (e.g. licences sold, spin-off company revenues, donations, etc.) in the calendar year.

POPULARIZATION OF VAVAI

3.6 The most important activities in the field of popularization of R&D&I and communication with the public

The evaluated unit shall briefly describe its main activities related to the popularisation of R&D&I and communication with the public (e.g. popularisation lectures, citizen science initiatives, etc.) during the period of 2019–2023 and provide up to 10 examples that it considers the most significant.

Maximum 500 words plus 200 words for each example given.

Self-assessment:

The FCH recognises the irreplaceable role of universities in shaping our society, both in terms of developing knowledge, expertise and the competitiveness, and in terms of cultivating our social relations, communication and resistance to the manipulation of information. Unfortunately, we often witness the devaluation of values, the disregard for education, honesty and correctness. As a research-oriented faculty, FCH uses the communication of the content, meaning and results of its research to the broad and professional public to fulfil its mission in this area.

FCH does indeed engage in a wide range of outreach activities. For a brief review of some of our public events, please visit our YouTube channel: <https://www.youtube.com/@fchvut6236>. The activities can be divided according to the target groups they are aimed at. These groups include **the general public**, where we aim to communicate chemistry and related disciplines as socially important sectors that enable our current technological advances and provide a range of tools to address today's global challenges and threats. These include, for example video and photo presentations of research topics, study programmes, graduate medallions, etc. Among others the FCH regularly participates in Science Playground, Science in School, Majáles, Science and Technology Festival (highlights from 2022: <https://www.youtube.com/watch?v=uujWEB6ovv0>) which is the largest annual popular science event in Brno, with the participation of 40 scientific and technical institutions, popular education organisations, academic institutes, universities and private companies, etc.

The second group is **secondary and primary school** pupils and students. These activities are aimed to spark student's interest in technical fields. These activities include, for example laboratory workshops for gifted primary school pupils organized in cooperation with the South Moravian Centre for International Mobility (JCMM), Minierasmus which is project organised by the Future Generation Europe (<https://futuregenerationeurope.eu/en/home/>), etc.

The third group involves the **professional public** where we aim to communicate our scientific outcomes and create broad international network. And finally, the fourth group consists of our current **students, employees and alumni**. For these we organise meetings on appropriate occasions, e.g. in 2021 we celebrated the 110th anniversary of the establishment of the FCH, whose origins date back to the official approval of the establishment of the Czech Technical University (in Brno) in 1911, making it one of the oldest chemical faculties in the Czech Republic, see the events recap videos: <https://www.youtube.com/watch?v=RgP81JxGLqw>, <https://www.youtube.com/watch?v=nwu7KIUjGNg>.

In addition to traditional events held on the faculty premises or as part of various events organized by external organizers, the FCH seeks to communicate scientific research topics to the general public through short videos, news and social media posts: YouTube <https://www.youtube.com/@fchvut6236>, Facebook <https://www.facebook.com/FCHVUT/>, X <https://twitter.com/VUTvBrne> and Instagram <https://www.instagram.com/fchvut/>.

The FCH also publishes its own journal, Derivative, <https://www.fch.vut.cz/fakulta/derivat>. It is produced at irregular intervals as a result of the joint efforts of the staff and students of the FCH. The aim is to give at least a partial picture of the colourful life of the Faculty and the people who live and have lived it.

Selected activities for the general public

- Researchers night. FCH participates every year. Attendance is always high, around 500-800 visitors directly at the FCH site. Event recap video: <https://www.youtube.com/watch?v=TBpb7i4xGpI> (2019), <https://www.youtube.com/watch?v=A7gDsRa5Tkg> (2022).
- Open Day and Chemistry Day. Two annual events held on the same day at FCH. The aim is to showcase our work to our current students, prospective students and the wider community (Open Day) and to give our graduate employers the opportunity to introduce themselves to FCH students and prospective students and to demonstrate the employment opportunities available to them if they study at FCH. Short recap from 2023: <https://www.youtube.com/watch?v=gMnAF5rojUQ>.
- Chemical (mini) opera. This unique project, which started in 2023, is an attempt to combine the world of science and opera. The opera was written by our doctoral student as a contribution to the 125th anniversary of the BUT. Staff and students of the FCH participated in the realisation of the opera (also as actors) and the video was produced by the FCH and filmed in the premises of the faculty. We hope you enjoy this unusual experiment: <https://www.youtube.com/watch?v=cL5IW-o5py8>.

Selected activities for primary and secondary school pupils and students

- Student scientific conference Chemistry is life. Every year, the FCH organises a conference for students of chemistry and related subjects at bachelor, master and doctoral level, as well as for high school students. During the conference, the results of the students' research are presented in the form of oral or poster presentations. Valuable prizes are awarded for the best papers. Short video recap from 2022: <https://www.youtube.com/watch?v=G1gpoV8nRHY>.
- Workshops and lectures for high school students. We organise laboratory workshops and lectures for high schools, ranging from a few hours to several days. The aim is to give talented students the opportunity to develop. We also aim for dissemination of the scientific topics we are working on at the FCH. Short video from 2023: <https://www.youtube.com/watch?v=IVoJmipc1wA>.
- Chemistry Olympiad. This is a nationwide competition for high school students. FCH regularly hosts the regional round and in 2024 we hosted the national round. Excerpt from the national round: <https://www.youtube.com/watch?v=QEgZp1EJowM>.
- High school research activities. Each year our academics lead 10-20 high school students who carry out their research activities at FCH. These students then defend it in front of school committees and can advance to the national round.

Selected activities for the professional public

- Chemistry and Life (<https://www.fch.vut.cz/en/chl/conference>). Regularly (every 3 years) organised international conference Chemistry and Life by FCH. It is an international forum bringing together experts from academia and industry. It has become a forum for sharing information, gaining knowledge, forging new and strengthening existing partnerships and friendships, thus playing an important role in the development of chemical sciences and technologies in both basic and applied research and development. The event also includes the Industrial Forum, which has been created as a platform for exchanging experiences and discussing the possibilities of cooperation between universities and industrial partners in the field of science and research, as well as in the field of student education, with a view to reflecting the requirements of industry and the job market.
- European Symposium on Biopolymers (ESBP, <https://esbp2023.com>). In 2023, FCH hosted the 11th edition of the international conference European Symposium on Biopolymers (ESBP), one of the most important European events in the field of biopolymers. Held since 2000, the conference successfully brings together experts from diverse fields such as molecular biology or biotechnology, but also from materials science and processing, as well as application specialists

in areas such as agriculture, cosmetics or medicine. A brief overview:
<https://www.youtube.com/watch?v=Mgf3owsGyDg>.

- Other international conferences. FCH staff also organised a number of other conferences and seminars, such as the 7th Central and Eastern European Conference on Thermal Analysis and Calorimetry (CEEC-TAC7), EUROCOALASH, Thermophysics, International Conference and School on High-Resolution Ultrasonic Spectroscopy, etc.

IMPLEMENTATION OF RECOMMENDATIONS

3.7 Implementation of the recommendations in Module 3

The evaluated unit will briefly describe how it has implemented the recommendations for Module 3 from the previous evaluation period, if applicable.

Maximum 1000 words.

Self-assessment:

In the previous evaluation period (2014-2018), FCH received the highest possible rating of 5 - Excellent. Nevertheless, the MEP made a number of recommendations on where FCH can improve further. The Faculty Management considers the overall evaluation as an acknowledgement of the continuous work of the Faculty Management and the staff involved in the Faculty. It is also aware of the fact that the recommendation of the MEP is an important feedback, therefore the Faculty Management has incorporated the suggestions and comments of the MEP into the Strategic Plan for Educational and Scientific, Research, Development and Innovation, Artistic and Other Creative Activities of the Faculty of Chemistry of BUT for the period 2021-2030. The implementation of these plans is still in progress.

Main areas for improvement formulated by the MEP

Encourage staff members to publish high quality papers in the top scientific journals and highly recognised scientific conferences. Action taken:

- ✓ Allocation of funds within the FCH budget based on the performance of the research group. Support is provided in the form of increased budgets for Faculty Institutes through progressive budgeting based on the quality of R&D outputs and based on the financial volume of projects held by the Institutes' research groups.
- ✓ Motivation system for doctoral students. A progressive bonus scholarship has been introduced for PhD students who publish in high quality scientific journals with an impact factor in the first decile and first and second quartile.
- ✓ Developing the technical infrastructure for excellent teams to operate. This includes intensive participation in infrastructure development projects, such as EU-funded operational programmes and the National Economic Recovery Plan. These funds mainly support infrastructure for top research topics. In the period under review, we used more than CZK 79 million / EUR 3 million to support research infrastructure, which is an increase of almost 40% compared to the previous period.
- ✓ We have also expanded the project support department to provide better support for attracting international projects, as international collaboration leads to the production of high-quality papers.
- ✓ Dean's Award. This prize (CZK 100,000 / EUR 4,000) is awarded to a team of authors who have published in a prestigious scientific journal in the past year. The publication must have been mainly produced at the FCH.

Increase flux of foreign scientists and research staff to the faculty; increase their visibility by performance of the lecturing and seminars performance both at master and doctoral studies levels. Measures taken:

- ✓ In addition to the existing support for regular short-term stays abroad, we have focused on funding long-term stays in order to establish more permanent and intensive links with foreign partners.
- ✓ We have increased the number of foreign academics working with us/going abroad for longer periods. This is, for example, M. I. Vladu (h-index 27, 4 months), C. Yumusak (h-index 15, 10 months), C. Ulbrich (h-index 18, 4 months) from Johannes Kepler University (JKU) in Linz. Examples of the outgoing stays: J. Krajčovič - University of Bari Aldo Moro (Italy, 12 months), A.

Kovalenko - JKU Linz (Austria, 12 months), A. Vargová - Norwegian University of Science and Technology (Norway, 10 months), J. Pospíšil - Universitat Jaume I (Spain, 6 months), and others. We will continue to support these activities as they provide lasting contacts that lead to joint projects, submission of papers and further student exchanges.

- ✓ We also contribute financially to students' stays abroad, over and above the support provided by programmes such as Erasmus. In this way, we motivate students to stay longer in more prestigious (and more expensive) places, where we have a greater potential for more lasting and better contacts and results.

Identify the core directions of the global/European/local economic directions with respect to the human resources/materials/instrumentation faculty background and its future vision of the institutional development. Continue in the search of strategic partnerships with higher accent on international EU/global impact.

- ✓ Megatrends and major societal challenges include the transformation of climate, environment and industrial resources. To address these areas, FCH carries out research in the form of valorisation of food and agricultural waste through biotechnological processes into industrially usable raw materials (circular economy concept), where we have a long-standing and unique expertise. We have been working on this technology at FCH for more than 15 years and are constantly developing it. Activities to commercialise the biotechnological production of PHA bioplastics from waste oils are being developed with Nafigate, which has acquired the FCH patent licence.
- ✓ The biotechnological valorisation of food and agricultural by-products for the production of industrially important metabolites and high value-added substances (vitamins, provitamins, antioxidants), nutraceuticals and ingredients for food supplements and cosmetics is also part of the circular economy. In this respect, we are working towards the establishment of a national centre of excellence and have developed the Valorize project.
- ✓ Other key areas for Europe include semiconductor chip manufacturing. Given FCH's expertise in materials science, we have begun to develop an important partnership with the US branch of ON Semiconductor Czech Republic, s.r.o. We are working with this company on a new study programme, carrying out theses, doctoral studies, etc.
- ✓ Security research has also been a key area, especially recently. We are working on the development of materials and technologies such as the ballistic panel mentioned above., see. Chapter 3.4
- ✓ The FCH has expanded its activities towards national and international visibility, and selected research results are exhibited at appropriate events. One example is the International Defence and Security Technologies Fair (IDET, <https://www.bvv.cz/en/idet>), where a prototype of the Ballistic Protective Panel for the creation of mobile protective barriers was exhibited in the past. This panel is currently being commercialised with Athex Technology Ltd. This output was developed as part of the Means for Ballistic Protection Enhancement of Vehicles and Critical Infrastructure project described in Chapter 3.3.

Motivate research staff for practically oriented research/development activities. Identify potential partners and results of the R&D outputs with commercialization potential.

- ✓ We have implemented a transformation of the entire ecosystem and the faculty knowledge transfer department, see more in Chapter 3.5.
- ✓ We conduct awareness-raising events to raise awareness of the Methodology for Evaluating Research Organisations in the Czech Republic (M17+) and its individual stages and modules. As a result, the academic community is made aware of the importance of reporting quality results of applied research and their patent protection. Attention is also being paid to the management of contractual relations in applied research projects, where it is necessary to obtain a share of the revenues associated with the commercialisation of the results of applied research.

- ✓ We also promote awareness of the possibility of commercialising research results among our students, e.g. through the Pitch Contest, in which our student Vojtěch Dobiáš won first prize for the best presentation of the commercial potential of his research. Another example is our student Monika Wikarská, who during her PhD studies founded her own cosmetic brand Wikarska Symbiotics (<https://www.wikarska.com>), where she applies her knowledge to the production of her own cosmetic products.
- ✓ As described above, we work with a number of industrial companies and negotiate with them for the commercialisation of research results where potential is identified. Selected examples are described in detail in section 3.4.

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: Faculty of Civil Engineering (FCE)

FORD: 2 - Engineering and technology

SOCIAL CONTRIBUTION OF THE EVALUATED UNIT

3.1 Introductory information about the unit under evaluation

The evaluated unit will describe its mission and vision and provide a general self-reflection of the societal contribution of R&D&I, along with its long-term goals in the fields it develops. The distribution of research activities by type of research will also be commented on.¹ The evaluated unit will describe its organisational structure and size (staffing, number of students, number of study programmes implemented, etc.) based on the data provided in annex tables 3.1.1 to 3.1.6.

Maximum 1000 words.

This is a non-rated indicator that serves as an introduction to the evaluated unit, providing context for data in indicators 3.2-3.7.

Self-assessment:

The Faculty of Civil Engineering (hereafter FCE) of the Brno University of Technology (BUT) is the largest faculty at BUT and the second-largest faculty of civil engineering in the Czech Republic. It is also the oldest faculty of BUT with more than 120 years of tradition. The faculty is actively involved in the development of civil engineering, architecture and related fields, and emphasizes integrating theoretical knowledge with practical applications and connecting the education of talented students with leading basic and applied research and knowledge transfer into practice. In recent years, the faculty has established itself in a wide range of areas, ranging from sustainable building materials to the digitalization of construction processes, and maintains close collaboration with industrial partners, public administration and academic institutions at both national and international level.

The faculty mission lies in the preparation of highly qualified experts in construction practice, science and research. Its educational activities are focused on providing professional and career-oriented education at all levels – undergraduate, graduate and postgraduate. In the evaluated period, more than 4 000 students studied at the faculty in [12 bachelor's, 10 master's and 8 doctoral study programs](#). Within these study programs, students gain theoretical knowledge as well as practical skills. The faculty emphasizes growth of scientific and research capacities of students and early career researchers in doctoral degree programs and their involvement in scientific projects and contract research. The successful connection of the faculty with practice can be demonstrated (among others) via the [FAST JOB DAYS](#) event, in which more than 50 key companies from the construction sector participate in annually.

The long-term goal of the faculty is to strengthen the position of BUT as a prestigious European research and educational institution with emphasis on a development of advanced building materials,

¹ Basic, applied, contract, artistic research (see Definition of Terms in Methodology HEI2025+).

construction solutions and, in connection to that, also the digitalization, automation and sustainability in civil engineering. In order to do so, the faculty has a stable academic base consisting of approximately 340 FTEs of academics, researchers and doctoral students. The successful orientation of faculty employees on top scientific research in both national and international context can be supported by long-term statistics as well as by individual achievements. In the evaluated period, more than 100 national or international scientific projects in the amount of more than 50 million EUR were implemented by the faculty. The award of the prestigious grant [ERC Synnergy FATRESCON](#), presented as one of the [three examples of high-quality projects on the website of the European Commission](#), can serve as an example of individual success.

In 2024, the faculty went through an international evaluation. A complex evaluation of all faculty institutes was carried out by international evaluation panel. One faculty institute has received an A2 grade (Very good – Above-standard international level), the majority of other institutes an A3 grade (Good – Standard international level).

The research activities of the faculty cover a broad range of civil engineering areas and are centered around four major research fields: advanced building material; advanced civil engineering constructions; economy and environment; digitalization, robotics and 3D printing.

In the area of [advanced building materials](#), the faculty focuses on the development of innovative materials that improve the mechanical properties, energy efficiency and environmental sustainability of building structures. The research responds to current challenges in the construction industry, such as the need for carbon footprint reduction, construction waste recycling, increasing durability of constructions, and optimalization of their performance under extreme conditions.

The research of [advanced civil engineering constructions](#) is focused on the optimalization of design, increase of durability and extension of service of load-bearing systems of buildings, bridges and infrastructure objects. The key research topics include modelling of mechanical behavior of structures, developing adaptive and intelligent constructions, researching progressive reinforcement materials such as carbon and glass fibers, and resistance to extreme loads, including seismic, climatic and dynamic effects. The faculty also focuses on monitoring and diagnosing of building structures, the use of digital BIM modelling and the implementation of advanced computational methods, including artificial intelligence and advanced numeric simulations.

Within the theme of [economy and environment](#), the faculty focuses on effective management of construction projects, sustainable management of materials and reduction of impact of constructions on the environment. Furthermore, it engages in the lifecycle of buildings analysis, costs optimalization and use of principles of circular economics. Water resources management, reduction of emissions from buildings as well as the use of renewable materials form other important research area. This also includes the development of methodologies for environmental assessment of buildings, intelligent management of energy consumption and the development of economically efficient smart cities and environmental protection.

The problematics of [digitalization, robotics and 3D printing](#) is addressed by developing a methodology for automation of construction processes, use of artificial intelligence and advanced computational models for design and administration of buildings. An important part is the development of 3D print of concrete constructions which enables fast production of building elements with lower material consumption. The faculty also works on the implementation of digital BIM modelling, robotization of installation processes and development of sensory systems for intelligent monitoring of buildings and infrastructural objects.

The faculty also plays an important role in terms of social responsibility and actively participates in addressing society-wide challenges. Its experts provide expert consultancy and analyses for public administration, participate in crisis management during emergency situations and contribute to the

development of sustainable civil engineering. The faculty popularizes technical education within programs aimed at elementary and secondary schools such as the [Technické školky \(Technical Kindergarten\)](#) and [BUT Junior](#). Such projects motivate the youngest generation to study civil engineering and other technical disciplines and therefore contribute to the long-term development of technical education in the Czech Republic.

In its third role, the faculty actively contributes to the development of construction sector and improvement of quality of life of citizens. It cooperates with cities and regions on projects of sustainable urbanism, intelligent cities and energetically efficient buildings. The faculty also provides expert consultations and expert opinions for both public administration and private subjects and therefore helps improve the quality and safety of buildings. The academics take part in expert committees and participate in a development of legislation in the field of civil engineering. The faculty also engages in entrepreneurship and innovation support through technology transfer, licensing of patents and foundation of spin-off companies which transfer the results of research and development into the commercial sector.

The FCE is a dynamic institution, interconnecting education, research and development, and social responsibility. Its strategy is focused on the development of innovative technologies, support of sustainable civil engineering and active cooperation with industrial partners as well as with the private sector. Thanks to its activities and achievements, the faculty contributes significantly to the development of civil engineering and to solving current and future challenges in the field of infrastructure, urbanism and environmental planning.

Table 3.1.1 - Staffing per FTE²

Academic/ Professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	32,4/3,9	33,7/3,7	33,2/3,3	34,1/3,5	38,3/4,0	171,6/18,4
Associate Professor	67,5/7,3	69,9/7,8	71,7/8,1	73,6/7,5	69,6/8,6	352,3/39,4
Assistant Professor	163,7/56,2	162,0/55,0	153,9/52,1	154,5/53,3	156,6/54,0	790,8/270,6
Assistant	46,2/23,7	45,0/24,5	41,4/17,1	35,1/13,9	31,8/12,2	199,5/91,4
R&D Personnel ³	0/0	0/0	0/0	0/0	0/0	0/0
Researchers in other categories ⁴	49,1/8,4	24,7/4,3	18,9/4,4	26,5/4,9	18,0/3,9	137,2/25,9
Technical and economic staff ⁵	214,8/120,8	215,7/117,0	201,7/110,5	184,0/104,5	179,2/104,0	995,4/556,8

² The average number of hours worked is calculated as the ratio of the total number of hours actually worked during the reference period, from 1 January to 31 December, by all staff (including agreement on work activity, excluding agreement on work performance) to the total annual working time pool per full-time employee. The full-time status of the worker in the evaluated unit is always reported. If an employee holds more than one type of full-time job within the evaluated unit, the total sum of the two shall be reported.

³ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

⁴ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

⁵ Who participates in the management and support of R&D&I in the institution.

Scientific, research and development staff involved in teaching activities	0/0	0/0	0/0	0/0	0/0	0/0
Early career researchers ⁶	11,2/3,3	6,1/2,5	4,6/2,0	4,9/1,7	3,0/0	29,8/9,5
Total ⁷	584,9/223,6	557,1/211,9	525,4/197,4	512,7/189,4	496,5/186,8	2676,6/1009,2

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

3.1.2 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2019 (numbers of physical employees and personnel)⁸

Academic/ professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	2	0	5	2	20	1	10	1
Associate Professor	0	0	2	0	32	2	13	3	20	4	8	0
Assistant Professor	0	0	67	19	72	22	14	8	29	13	2	1
Assistant	10	1	26	10	15	9	9	5	0	0	0	0
R&D Personnel ⁹	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁰	12	6	16	4	8	1	2	0	2	0	3	0
Technical and economic staff ¹¹	25	8	40	22	61	40	69	40	44	23	7	3
Scientific, research and development staff involved in teaching activities	0	0	0	0	0	0	0	0	0	0	0	0
Early career researcher ¹²	0	0	11	4	2	0	0	0	0	0	0	0
Total ¹³	47	15	162	59	192	74	112	58	115	41	30	5

6 See Definition of Terms in Methodology HEI2025+.

7 Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

8 The total number of employees/workers as of 31st December of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

9 The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

10 The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

11 Who participates in the management and support of R&D&I in the institution.

12 See Definition of Terms in Methodology HEI2025+.

13 Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I Personnel, Researchers in other categories and technical and economic staff.

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D Personnel, Researchers in other categories and Technical and economic staff are mutually exclusive, i.e. one staff member is reported in only one category. The categories of scientific, research and development staff involved in teaching activities and early career researchers are reported collectively for all the above-mentioned categories.

3.1.3 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2023 (numbers of physical employees and personnel)¹⁴

Academic/ professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	7	1	4	0	19	3	16	2
Associate Professor	0	0	2	1	29	3	20	2	13	3	11	0
Assistant Professor	0	0	50	13	89	27	21	12	20	12	6	1
Assistant	10	2	18	3	8	6	6	4	2	1	0	0
R&D Personnel ¹⁵	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁶	8	1	7	3	11	2	3	0	2	0	0	0
Technical and economic staff ¹⁷	12	2	32	6	51	36	56	41	45	22	9	3
Scientific, research and development staff involved in teaching activities	0	0	0	0	0	0	0	0	0	0	0	0
Early career researcher ¹⁸	0	0	4	0	0	0	0	0	0	0	0	0
Total ¹⁹	30	5	113	26	195	75	110	59	101	41	42	6

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

14 The total number of employees/workers as at 31.12. of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

15 The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

16 The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

17 Who participates in the management and support of R&D&I in the institution.

18 See Definition of Terms in Methodology HEI2025+.

19 Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

Table 3.1.4 – Students

Type of study	2019		2020		2021		2022		2023		Total	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Undergraduate	2 373	918	2 476	976	2 458	972	2 382	955	2 399	923	5 761	2 131
Master's ²⁰	1 117	419	1 008	392	947	381	861	360	804	376	2 690	1 093
Doctoral	367	119	364	115	331	112	308	107	285	86	540	172
Lifelong Learning Courses	51	8	37	7	47	13	43	10	43	12	221	50
Total	3 908	1 464	3 885	1 490	3 783	1 478	3 594	1 432	3 531	1 397	9 212	3 446

Table 3.1.5 - Study programmes in Czech/English

Type of study programme	Total ²¹ / Of which professional study programmes											
	2019		2020		2021		2022		2023		Total	
Undergraduate	5/1	0/0	6/1	1/0	5/1	1/0	5/1	1/0	5/1	1/0	9/2	1/0
Master's	5/1	0/0	10/1	0/0	10/1	1/0	10/1	1/0	10/1	1/0	14/2	1/0
Doctoral	2/1	0/0	6/5	0/0	5/5	0/0	6/5	0/0	5/4	0/0	8/7	0/0
Lifelong Learning courses	10/2	0/0	16/2	1/0	15/2	2/0	15/2	2/0	15/2	2/0	23/4	2/0
Total	22/5	0/0	38/9	2/0	35/9	4/0	36/9	4/0	35/8	4/0	54/15	4/0

Note: For each SP type, enter the number of SPs in Czech language in the first cell and insert the number of SPs in English language after the slash in the same cell (e.g. 15/3), enter the number of professional SPs in Czech language in the second cell and insert the number of professional SPs in English language after the slash. Follow a similar procedure in the last column of the table (Total).

3.1.6 – R&D&I capacities

R&D&I field	FORD	FORD share [%]	Predominant type of research	Total share of industry group [%]
1. Natural Sciences	1.1 Mathematics	4,4	Basic Research	14,4
	1.2 Computer and information sciences	0,3	Balanced basic and applied research	
	1.3 Physical sciences	1,5	Basic Research	
	1.4 Chemical sciences	0,8	Basic Research	
	1.5 Earth and related environmental sciences	6,9	Balanced basic and applied research	
	1.6 Biological sciences	0,1	Basic Research	

20 All master's degree students are listed, regardless of the length of their programme of study.

21 The total number of study programmes for which admissions have been announced in a given academic year.

	1.7 Other natural sciences	0,4	Basic Research	
2. Engineering and Technology	2.1 Civil engineering	64,2	Applied Research	83,0
	2.2 Electrical engineering, Electronic engineering, Information engineering	1,0	Applied Research	
	2.3 Mechanical engineering	2,0	Applied Research	
		0,1	Balanced basic and applied research	
	2.4 Chemical engineering			
	2.5 Materials engineering	13,5	Applied Research	
	2.6 Medical engineering	0,1	Applied Research	
	2.7 Environmental engineering	1,1	Applied Research	
	2.8 Environmental biotechnology	0,1	Applied Research	
	2.9 Industrial biotechnology	0,1	Applied Research	
	2.10 Nanotechnology	0,3	Applied Research	
	2.11 Other engineering and technologies	0,4	Applied Research	
3. Medical and Health Sciences	3.1 Basic medicine	0,0	Zvolte položku.	0,4
	3.2 Clinical medicine	0,1	Applied Research	
	3.3 Health sciences	0,1	Applied Research	
	3.4 Medical biotechnology	0,0	Zvolte položku.	
	3.5 Other medical sciences	0,2	Applied Research	
4. Agricultural and veterinary sciences	4.1 Agriculture, Forestry, and Fisheries	0,7	Applied Research	0,7
	4.2 Animal and Dairy science	0,0	Zvolte položku.	
	4.3 Veterinary science	0,0	Zvolte položku.	
	4.4 Agricultural biotechnology	0,0	Zvolte položku.	
	4.5 Other agricultural sciences	0,0	Zvolte položku.	
5. Social Sciences		0,1	Balanced basic and applied research	1,1
	5.1 Psychology and cognitive sciences			
	5.2 Economics and Business	0,7	Applied Research	
	5.3 Education	0,0	Zvolte položku.	
	5.4 Sociology	0,0	Zvolte položku.	
	5.5 Law	0,0	Zvolte položku.	
	5.6 Political science	0,0	Zvolte položku.	
	5.7 Social and economic geography	0,1	Applied Research	
	5.8 Media and communications	0,0	Zvolte položku.	
	5.9 Other social sciences	0,2	Applied Research	
6. Humanities and the Arts	6.1 History and Archaeology	0,0	Zvolte položku.	0,2
	6.2 Languages and Literature	0,0	Zvolte položku.	
	6.3 Philosophy, Ethics and Religion	0,0	Zvolte položku.	
	6.4 Arts (arts, history of arts, performing arts, music)	0,2	Applied Research	
	6.5 Other Humanities and the Arts	0,0	Zvolte položku.	
Total		100 %	-	100 %

RECOGNITION BY THE RESEARCH COMMUNITY

3.2 Recognition by the research community

The evaluated unit will briefly comment on its position in the research community. It shall consider individual and other prestigious R&D&I awards, participation of its academic staff in the editorial boards of international scientific journals, elected membership in professional societies, major invited lectures given by the evaluated unit's academic staff abroad or by foreign scientists and other relevant guests at the evaluated unit. Additionally, it will address the involvement of staff in the evaluation of national or European project/programme calls over the period of 2019–2023 based on the data provided in annex tables 3.2.1 to 3.2.5 (max. 10 most relevant items). If necessary, the evaluated unit shall list any additional services to the scientific community that it considers relevant.

Maximum 1000 words.

Self-assessment:

The faculty has established itself as a significant player in the international research community in the field of civil engineering, as illustrated by a wide range of professional activities of its academic staff. Key factors that support this position include prestigious awards won by individual researchers and research teams, active participation in editorial boards of prestigious scientific journals, elected memberships in professional international societies, and regular participation in major scientific conferences. The evaluated unit also hosts distinguished international experts, participates in the organization of scientific meetings and plays a key role in the evaluation of research projects at both national and European level.

Among the most prestigious individual awards of its academics belongs the award of professor Rostislav Drochytka by the International Association of Alternative Construction Materials for his life-long contribution to the field of energy by-products use in construction industry. His research brought an innovative approach towards the processing of energy by-products, especially fluid ashes, by their use in cement composites, soil stabilization and waste solidification. This approach not only contributed to the sustainability of constructions but also had a direct impact on legislative regulations that enable wider use of these materials in practice. Another significant award was the [honorary membership in the EUROCONSTRUCT association](#) for professor Drahomír Novák for his life-long contribution to stochastic continuum mechanics and reliability engineering in 2023. This award was presented at the ceremony of the EUROCONSTRUCT conference in Vienna, mirroring the significance of Novák's research which contributed to advanced methodologies of assessment of construction reliability using probability models.

The academic staff of the evaluated unit have a significant representation in editorial boards of prestigious scientific journals which substantiates their professional influence at international level. Professor Jitka Mohelníková is a member of editorial board of a renowned [Journal of Building Engineering](#) published by Elsevier. This journal belongs to top-rated scientific periodicals in the area of civil engineering (Q1 according to AIS) and focuses on the problematics of the life cycle of construction materials and constructions, including their design, operation, maintenance, recycling and impact on the environment. The presence of the Faculty's academic staff in editorial boards not only increases the prestige of the evaluated unit but also enables its staff to be actively involved in forming scientific trends and criteria for quality assessment of published scientific results.

Among the most significant invited lectures of FCE academic staff at foreign institutions belongs the lecture of professor Jiří Stráský at the Technical University of Madrid (2020). The lecture "Search for the true structural solution" presented innovative approaches towards the design of bridge construction with emphasis on esthetics, construction efficiency and minimalization of impact on ecology. Professor Stráský presented bridges from the Czech Republic, England, Spain and the USA,

while accenting the principles of shape optimisation and use of new materials leading to the carbon footprint reduction. Another important invited lecture took place at the John Hopkins University (2022) where associate professor Lukáš Novák presented the results of his research in the field of polynomial chaos and stochastic methods in civil engineering. The cooperation with local experts led to a couple of common publications and a successful award of international [fund project](#) focused on the prediction of mechanical behavior of advanced materials under extreme conditions.

The evaluated unit regularly hosts significant foreign experts which enables deepening international scientific collaboration. In 2022, Professor Oliver Wiechold from RWTH Aachen held a lecture on the extension of service life of cementitious composites by applying multifunctional alkaline gels, which enable the repassivation of steel reinforcements. The lecture led to a bilateral cooperation which resulted in a proposal of shared Czech-German research project aimed for 2025–2026. Another important guest, professor [Michael Shields from Johns Hopkins University](#), presented a lecture dedicated to the use of machine learning methods to quantify uncertainties in civil engineering. Following his visit, an intense collaboration with the research group SURG (Shields Uncertainty Research Group) was established, which has already resulted in couple of shared scientific publications and grant projects focused on probabilistic modelling of building structure safety.

The academics from the evaluated unit also actively participate in the evaluation of scientific projects at both national and European level. In 2018–2022, [professor Rostislav Drochytka](#) was a member of the [Presidium of The Czech Science Foundation](#) (GACR) – agency responsible for basic research in the Czech Republic that plays a key role in strategic navigation of research in the technical sciences. At the same time, professor Drochytka served as a chair of the Supervisory Board of the Technology Agency of the Czech Republic in 2019–2023 and was responsible for funds distribution and the control of efficiency of scientific projects. [Associate professor Tomáš Apeltauer](#) has been a member of the [Research Board of The Technology Agency of the Czech Republic](#) since 2018. The agency is responsible for the applied research in the Czech Republic and its Research Board forms the priorities of scientific research.

The involvement of academic staff in European research initiatives is crucial as well. Professor Petr Hlavínek has been serving as an expert of the European Commission on research project evaluation within the framework programs for research and innovation. His activities include a monitoring of projects financed from the Horizon 2020 program and the subsequent Horizon Europe program. He specializes in innovative approaches in water resources management and the application of advanced environmental technologies in civil engineering.

Therefore, the FCE confirms its position in international scientific community by not only holding prestigious awards and its involvement in scientific boards, but also by its active contribution to research projects, international collaboration and hosting prominent foreign researchers. These factors ensure a sustained growth in quality of research and reinforce the position of the evaluated unit in the field of civil engineering and related scientific disciplines. Herewith, the faculty fulfills its mission and organically contributes to the fulfillment of the mission of the BUT as a whole.

Table 3.2.1 - Prestigious R&D&I awards granted during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the award	Awarding institution
prof. Ing. Milan Ostrý, Ph.D.	Chair of Technical Standardization Commission 43 – Thermal Engineering (TNK 43 Stavební tepelná technika)	Czech Standardization Agency
prof. RNDr. Josef Diblík, DrSc.	City of Brno Award in the field on natural sciences (2023)	Brno City Council

prof. Ing. Rostislav Drochytka, CSc., MBA, dr. h. c.	Medal for professional collaboration awarded on the occasion of the 30 th anniversary of the Chamber foundation	Czech Chamber of Authorized Engineers and Technicians Active in Construction
prof. Ing. Rostislav Drochytka, CSc., MBA, dr. h. c.	A prominent figure in the field of energy by-product utilization	ASVEP – Energy By-products Utilization Association (Asociace pro využití energetických produktů, z.s.)
doc. Ing. Ladislav Klusáček, CSc., doc. Ing. Radim Nečas, Ph.D., Ing. Adam Svoboda, Ph.D., Ing. Martin Olšák	Bridge Research Award	Engineering Technics Press, Edinburgh, Scotland, UK (18th European Bridge Conference)
prof. Ing. Jiří Stráský, DSc.	Medalla de ACHE	la Asociación Española de Ingeniería Estructural, Madrid
prof. Ing. Drahomír Novák, CSc.	Honorary member of EUROSTRUCT association, Vídeň 2023	EUROSTRUCT association
prof. Ing. Miroslav Vořechovský, Ph.D.	Featured in the publicly available list which contains either the top 100,000 scientists across all fields according to the composite citation index or those who are within the top 2% of scientists of their main subfield discipline (career-long updated to end-of-2019, end-of-2020, end-of-2021, and end-of-2022).	The list has been composed by researchers from Stanford University and uses Scopus data provided by Elsevier through ICSR Lab.
prof. Ing. Zdeněk Kala, Ph.D.	Featured in the publicly available list which contains either the top 100,000 scientists across all fields according to the composite citation index or those who are within the top 2% of scientists of their main subfield discipline (career-long updated to end-of-2019, end-of-2020, end-of-2021, and end-of-2022).	The list has been composed by researchers from Stanford University and uses Scopus data provided by Elsevier through ICSR Lab.
prof. Ing. Miroslav Bajer, CSc.	Medal for professional collaboration awarded on the occasion of the 30 th anniversary of the Chamber foundation	Czech Chamber of Authorized Engineers and Technicians Active in Construction

Note: Provide up to 10 examples.

Table 3.2.2 Participation of academic staff of the evaluated unit in editorial boards of international scientific journals during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of scientific journal, ISSN
Prof. Ing. Jitka Mohelníková, Ph.D.	Journal of Building Engineering, ISSN 2352-7102, Q1 AIS
Prof. RNDr. Josef Diblík, DrSc.	Mathematica Bohemica, ISSN 0862-7959, Q3 AIS
Prof. RNDr. Josef Diblík, DrSc.	Opuscula Mathematica, ISSN 1232-9274, Q1 AIS
Prof. RNDr. Josef Diblík, DrSc.	Bulletin of Mathematical Sciences, ISSN 1664-3607, Q2 AIS
Prof. Ing. Jaromír Říha, CSc.	Journal of Hydrology and Hydromechanics, eISSN: 1338-4333, Q3 AIS
Prof. Ing. Jana Korytářová, Ph.D.	Archives of Civil Engineering, ISSN 1230-2945, Q3 AIS
Doc. Mgr. Libor Topolář, Ph.D.	Solid State Chemistry, 2296-2646 – editor, Q2 AIS
Ing. et Ing. Václav Venkrbec, Ph.D.	PLOS ONE, 1932-6203, Q2 AIS
Ing. et Ing. Václav Venkrbec, Ph.D.	Frontiers in Built Environment, 2297-3362, Q1 AIS
Prof. Ing. Ondřej Šíkula, Ph.D.	International Journal of Engineering and Technology Innovation (IJETI) ISSN 2223-5329, Q2 AIS

Note: Please provide up to 10 examples of academic staff participation in editorial boards of international scientific journals (e.g. editor, editorial board member, etc.).

Table 3.2.3 The most important invited lectures delivered by the academic staff of the evaluated unit at foreign institutions during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Invited lecture title	Name of host institution, or name of conference or event	Year
Prof. RNDr. Josef Diblík, DrSc.	Absolute stability of neutral systems with Lurie type nonlinearity.	Lodz University of Technology, Polsko	2021
Doc. Ing. Nikol Žižková, Ph.D.	Using By-Products to Reduce CO ₂ Emissions During the Production of Polymer-Modified Mortars	RWTH Aachen University, Tagung Bauchemie 2019	2019
Prof. Ing. Jiří Zach Ph.D.	Insulation materials based on textile by-producte	Technische Universität Wien	2020
Prof. Ing. Jiří Stráský, DSc.	Search for the true structural solution	Workshop to tribute Prof. Manterola, School of Civil Engineering, Technical University of Madrid (UPM)	2020
Doc. Ing. Lukáš Novák, Ph.D.	Physics-informed polynomial chaos expansion	Institut de Mathématiques de Toulouse, France	2023
Doc. Ing. Lukáš Novák, Ph.D.	Non-intrusive Polynomial Chaos Expansions: Adaptivity, Sparsity and Active Learning	Johns Hopkins University, USA	2022
Prof. Ing. Jan Eliáš, Ph.D.	Engineering optimization via evolutionary algorithms	University of Minnesota	2020
Prof. Ing. Miroslav Vořechovský, Ph.D.	Experimental Designs for Screening and Probabilistic Integration with Computer Models	TU Dresden	2023
Prof. Ing. Miroslav Dumbrovský, CSc.	Adaptation measures for landscape water management	NIBIO - Norway	2022
Doc. Ing. Daniel Marton, Ph.D.	Reservoir sedimentation and reservoir capacity evaluation along the Thaya river	BOKU Vienna, IAHR, Spain Water, Vienna Water Conferences 2023 - 40th IAHR World Congress: Rivers – Connecting Mountains and Coasts	2023

Note: Provide up to 10 examples.

Table 3.2.4 - The most important lectures by foreign scientists and other guests relevant to R&D&I at the evaluated unit during the evaluation period

Name, surname and title(s) of the lecturer	Lecturer's employer at the time of the lecture	Invited lecture title	Year
Assoc. Prof. Carles Serrat Piè	Universitat Politècnica de Catalunya-BarcelonaTECH	BRAIN: A networking tool for building stock management.	2021
Prof. Dr. Oliver Weichold,	RWTH Aachen University	Multifunctional alkaline gel for cement-based materials and re-passivation of crack-crossing steel rebars.	2022
Jakob Sand, partner of BIG	Bjarke Ingels Group	BIG Architecture	2020
Dr. James Harty	KEA, Copenhagen school of design & technology, Denmark	Reclaiming the street	2021
prof. Ricardo Nuno Francisco do Carmo	Instituto Politécnico de Coimbra	Assessment the reinforced concrete structures behaviour, monitoring and laboratory tests	2023
Prof. John E. Bolander	University of California, Davis	Discrete Modeling of Concrete Materials and Structures	2022

Prof. Michael Shields	Johns Hopkins University	The Intersection of Machine Learning and Uncertainty Quantification in Physics-based Modeling	2022
Prof. Kwang-Chun Park	University of Colorado, USA	Method of Localized Lagrange Multipliers and its Recent Applications: Multi-physics, Reduced-order Modeling, and Uncertainty Quantification	2019
Prof. Mircea Grigoriu	Cornell University, USA	Probabilistic models and methods for solving stochastic equations	2019
Prof. Dr. Ardesir Mahdavi	Viena University of Technology, Department of Building Physics and Building Ecology, Austria	Are building simulation and sustainable buildings solution for the global environmental challenges?	2019
prof. Lillian Oygarden, Dr. Richard Barneveld	NIBIO – Norwegian Institute of Bioeconomy Research	Issues of soil erosion and runoff conditions in Norway	2023
Dr. Sakdirat Kaewunruen CPEng, NPER, RPEQ	University of Birmingham, School of Civil Engineering, Birmingham Centre for Railway Research and Education, Department of Civil Engineering	Composite sleepers and bearers: Design and Performance and its comparison with timber and concrete sleepers	2019

Note: Provide up to 10 examples.

Table 3.2.5 - Involvement in the evaluation of national/European research project/programme calls relevant to the R&D&I area at the unit during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the research project/programme call	Name of the contracting authority/guarantor of the project/programme call	Year
Prof. Ing. Drochytka Rostislav, CSc., MBA, dr. h. c.	All types of programme calls	The Czech Science Foundation – Member of the Presidium, responsibility for technical sciences	2018-2022
Prof. Ing. Rostislav Drochytka, CSc., MBA, dr. h. c.	All types of programme calls	Technology Agency of the Czech Republic – Chair of the Supervisory Board	2019-2023
Doc. Mgr. Tomáš Apeltauer, Ph.D.	All types of programme calls	Technology Agency of the Czech Republic – Member of the Research Board	since 2018
Doc. Ing. Bydžovský Jiří, CSc.	GACR Chairman of the panel P104, member OK1 – all calls OK1	The Czech Science Foundation	2019-2022
Doc. Ing. Sokolář Radomír, Ph.D.	GACR Vice-chairman of the panel P104, member OK1 – all calls OK1	The Czech Science Foundation	2022
Prof. Ing. Zach Jiří, Ph.D.	GACR Vice-chairman of the panel P104, member OK1 – all calls OK1	The Czech Science Foundation	2023
Prof. Ing. Zbyněk Keršner, CSc.	Chairman and member of the panel P105: Structural Mechanics and Construction, Fluid Mechanics and Geotechnics	The Czech Science Foundation	2019-2022
Prof. Ing. Miroslav Vořechovský, Ph.D.	Committee member of panel PE8 (Engineering), starting grants	European Research Council	2019 & 2021
Doc. JUDr. Ing. Dufek Zdeněk, Ph.D.	Member of the GACR Supervisory Board	The Czech Science Foundation	2018-2022
Prof. Ing. Petr Hlavínek, CSc., MBA	Project evaluation and monitoring, EU FP 5, EU FP6, HORIZON 2020, HORIZON EVROPA	European Commission – European Research Executive Agency Executive Agency for Small & Medium-sized Enterprises European Innovation Council and SMEs Executive Agency	2009-2024

Note: Provide up to 10 examples.

RESEARCH PROJECTS

3.3 Research projects

The evaluated unit shall list at most 10 (considered most significant by the evaluated unit) research projects/activities (regardless of whether they are supported by public funds or based on contract research²²) that it has implemented or participated in during the period of 2019–2023²³. This should be done from the full list in annex tables (Table 3.3.1-3.3.2)²⁴, regarding particularly the results achieved or the application potential of the projects. The unit should also describe how the research projects contributed to the mission and purpose of the evaluated unit. If the evaluated unit has been a participant in listed project, it shall indicate which other entities were involved and describe its contribution to the project. The interdisciplinary aspects of the projects will also be commented on, along with any collaboration with other units of the evaluated HEI.

Maximum 300 words per project.

Self-assessment:

The research activities of the Faculty of Civil Engineering of BUT are a key tool for the fulfilment of its mission and long-term goals. The faculty profiles itself as a significant center of science and research, focused on advanced building materials, construction solutions, digitalization and sustainability in civil engineering. These areas are reflected in research projects that link theoretical knowledge with practical applications and respond to current challenges of the construction sector.

In the field of advanced building materials, the faculty has been conducting long-term research focused on innovations leading to improvement of mechanical properties of materials, their sustainability and durability in extreme conditions. In this respect, the project of the Centre for Advanced Materials and Efficient Buildings which focused on the implementation of circular economy principles in the construction industry can serve as an example. The introduction of methods for more efficient use of raw materials and waste reduction, helping to address the global problem of depletion of non-renewable resources, has been a significant contribution. Another example is the research for Fels Vertriebs und Service GmbH & Co. KG, focused on optimizing the properties of autoclaved aerated concrete using eco-friendly quicklime. This project responded to the new requirements following the Green Deal, which emphasizes the reduction of the carbon footprint of building materials.

Research in the field of advanced building structures focuses on optimizing the design, increasing the durability and extending the service life of load-bearing systems of buildings, bridges and other infrastructure objects. The project *Fatigue of structural concrete driven by cumulative measure of shear strain*, carried out in cooperation with RWTH Aachen, addressed the issue of fatigue behavior of reinforced concrete under cyclic loading, which significantly affects the service life of bridges, airport runways and wind power plants. The results of the project have led to the development of a new adaptive time integration method that allows more accurate load simulation and more efficient design of reliable structures. Another example is the *SAFEBRIDGE* project, which used advanced numerical modelling to analyze the degradation of ten bridge structures in the Czech Republic and Austria. The outputs of the project have been incorporated into bridge assessment methodologies, leading to more accurate bridge safety assessments and maintenance planning.

²² For the definition of contract research for the purposes of evaluation in the HE segments, see Article 2.2.1 of the Community Framework for State Aid for Research, Development and Innovation 2014/C 198/01.

²³ Regardless of whether the projects are completed or still ongoing, provided that at least part of the project was implemented during the evaluation period.

²⁴ The evaluated unit shall only fill tables that are relevant to it.

In the field of economics and environment, the faculty focuses on effective management of construction projects, cost optimization and reduction of environmental impacts of construction. The project *Sediments, ecosystem services and interrelation with floods and droughts in the AT-CZ border region* addressed the issue of ecological impacts of human interventions in the river system of the Dyje river. The implemented measures such as meander restoration and bank revitalization have led to a reduction in flood risk and improved ecosystem services. The faculty also cooperates with the state enterprise DIAMO on research on the use of flotation sludge in the construction industry, which contributes to the development of sustainable technologies for recycling mining waste and thus reducing the ecological impacts of mining.

In the field of digitalization, robotization and 3D printing, the faculty focuses on the automation of construction processes and the use of modern computational methods for the design and administration of buildings. The contract research for the Arena Brno project, where the faculty carried out simulations of evacuation of people and analysis of fire ventilation efficiency, can serve as an example. This study contributed to the design of a safer operation of the hall and the provision of effective management of evacuation routes. The project *The strain limit for advanced modelling of steel structures - deterministic and probabilistic approach* focuses on the optimization of the design of steel structure interfaces aiming for a more efficient use of high strength steels which will lead to a reduction of material consumption and safety increase of constructions.

The cooperation of the faculty with public sector is another example of fulfilling faculty's mission. Long-term contract research for the State Office for Nuclear Safety (SUJB) includes nuclear power plant safety analysis, containment integrity assessment, and accident scenario impact assessment. The outputs of these analyses are directly implemented into SUJB methodologies, strengthening nuclear safety in the Czech Republic.

An important project focusing on the strategic infrastructure of the Czech Republic is contract research on the economic potential and technical parameters of the new port area in Hamburg. The faculty participated in the analysis of the socio-economic impacts of the relocation of the Czech port area, which enabled the optimization of logistics processes and more efficient connection of Czech economy with maritime trade.

The research activities of the FCE are closely linked to its educational activities, with students of all levels of study actively involved in research projects. This synergy between research, teaching and industrial cooperation creates an environment that prepares highly qualified professionals capable of addressing the complex challenges of modern civil engineering. In this way, the faculty contributes to technological progress, quality of life improvement and the development of sustainable civil engineering at both national and international level.

SELECTED BASIC OR APPLIED RESEARCH PROJECTS

Project name: [GC19-06684J Fatigue of structural concrete driven by cumulative measure of shear strain](#)

Provider of the funding: The Czech Science Foundation

Years of realization: 01.01.2019 – 31.12.2023

The international project focused on the resistance of concrete structures to cyclic loading and was carried out in cooperation with RWTH Aachen in Germany. The project was funded by the Czech Science Foundation and the Deutsche Forschungsgemeinschaft.

Cyclic loading, which influences the service life of bridges, airport runways and wind turbines, remained insufficiently researched in terms of a reinforced concrete. The project aimed to link microstructural mechanisms and macroscopic phenomena through models reflecting cumulative shear deformation. The adaptive time integration method developed in frame of the project allowed

efficient simulation of a high number of loads, which improved the accuracy of the results and accelerated the simulation processes.

The project developed a thermodynamic framework for the fatigue behavior of concrete, which was experimentally verified. The results were integrated into design procedures for cyclically loaded structures and into standardization processes, contributing to more cost-effective and reliable building designs. These findings have had wide practical application in the optimization of reinforced concrete structures in the infrastructure and energy sectors.

The project used an interdisciplinary approach, involving physics of materials, civil engineering and applied mathematics, leading to unique scientific results. The prestigious ERC Synergy grant that followed the project confirms its excellence and has enabled the extension of the collaboration to a global level. The project's results have supported the long-term safety and sustainability of building structures.

Project name: [ATCZ28 Sediments, ecosystem services and interrelation with floods and droughts in the AT-CZ border region](#)

Provider of the funding: European Regional Development Fund (ERDF)

Years of realization: 01.04.2016 — 31.12.2022

The aim of the project was to improve the ecosystem services and biodiversity of the river Dyje, which flows between the Czech Republic and Austria. The project focused on reducing the negative impacts of human intervention in the river system, such as channel straightening, floodplain disturbance and biodiversity loss. The consequences of these interventions have led to changes in stream load transport, sediment deposition in reservoirs and increased flood risk. The project implemented green infrastructure measures, including meander restoration, bank revitalization and the creation of islands in the reservoirs, to improve stream morphodynamics and protect natural habitats.

The project also co-funded the creation of a new hydraulic engineering laboratory (BOKU hydraulic engineering laboratory), which was a key to development of the models for optimal green infrastructure design. An emphasis was placed on sustainable sediment management, flood and drought prevention and improved ecosystem services. The key elements of the project were the transboundary cooperation between the State Enterprise Povodí Moravy s.p. and BOKU Vienna and the FCE of BUT.

The role of the FCE was to develop a Sediment Management Strategy of the Dyje river basin taking into account floods and droughts. The main outputs of the strategy were: i) quantification of siltation of the upper reservoir Nové Mlýny, conceptual design of a sustainable solution for siltation of the reservoir taking into account climate change, ii) establishment of transboundary joint monitoring of sediments in the Dyje basin, iii) using the Echo monitoring boat acquired from the project to prepare bottom surveys of important reservoirs in the basin and to update the bathymetric curves of the reservoirs.

Project name: [TN01000056 Centre for Advanced Materials and Efficient Buildings](#)

Provider of the funding: Technology Agency of the Czech Republic

Years of realization: 01.01.2019 – 31.12.2022

The National Competence Centre CAMEB (Centre for Advanced Materials and Efficient Buildings) was established in 2019 through the collaboration of the Czech Technical University in Prague, the Brno University of Technology, and twenty-eight other partners, including universities and private companies. The primary motivation for its establishment was the need to address the depletion of non-renewable natural resources and the increasing material and energy demands in construction. This trend, driven by growing requirements for energy savings in building operations, led to the need for innovative solutions that optimize the life cycle of buildings and reduce their environmental impact.

The CAMEB connected experts with diverse competencies and focused on improving resource utilization in construction. One of the key strategies was the application of the principles of circular economy and knowledge economy. The goal was to design more efficient buildings with longer lifespans, lower energy requirements, and minimal waste. Modern technologies, such as digitalization, process optimization, modeling, and advanced process control, played an important role, as these tools enabled more efficient planning and implementation of projects.

One of the Center's key objectives was to foster collaboration between industry and science. Through contractual research without state funding, university departments involved in the CAMEB contributed to innovations that addressed current challenges in civil engineering. The annual turnover of contractual research at these departments reached 100 million CZK, which represented a significant contribution to the Czech economy. For comparison, the total volume of direct collaboration between science and industry in the Czech Republic reached 950 million CZK.

The FCE played the role of a co-recipient within the project, implementing approximately half of all the sub-projects of the Center and working with a budget comparable to that of the main recipient. The long-term benefit of the project was that the CAMEB not only focused on improving existing technologies and methods but also on connecting them with other fields, such as information technology, cybernetics, and systems control. The Center contributed to the development of civil engineering as an interdisciplinary field and supported its transformation towards sustainability, innovation, and technological excellence.

Project name: [ATCZ190 Advanced Analysis of existing reinforced and pre-stressed concrete bridges](#)

Provider of the funding: INTERREG AUSTRIA – CZECH REPUBLIC

Years of realization: 01.09.2018 – 31.10.2021

The SAFEBRIDGE project, implemented under the Interreg program between the Czech Republic and Austria, focused on advanced nonlinear analysis and the reliability of existing bridges. It ran from September 1, 2018, to August 31, 2021, and involved engineers and scientists from both countries to address issues in the existing infrastructural network. The key objective was to use advanced numerical tools to analyze and model ten bridges (five in the Czech Republic and five in Austria) at both deterministic and stochastic levels.

The analyses included both initial static assessments and the evaluation of degradation phenomena affecting the reliability of the structures. The results were thoroughly described, documented, and combined into a general guide intended for engineers in SMEs who wish to perform precise and routine nonlinear analyses. These procedures help bridge owners and managers to plan maintenance systems more effectively.

During the project, so-called technical sheets were created, providing practical guides for using advanced tools. These sheets were distributed to strategic partners from the companies involved, who have already integrated them into their operational procedures. The project also had a significant impact on standardization in the field of civil infrastructure, as it contributed to the revision and improvement of methodologies for the assessment of bridge structures.

The expertise and mutual collaboration between the two project partners, BOKU University in Vienna and the Brno University of Technology, were key prerequisites for the successful implementation of the SAFEBRIDGE project. The FCE was mainly involved in the development of nonlinear computational models, calibration of material models based on experimental tests, mathematical modeling of degradation processes, and comprehensive analysis of the load-bearing capacity and reliability of the studied structures.

The results of the project were widely presented through several workshops and seminars, which were organized at the workplaces of partner institutions in both countries. These events increased awareness of the issues surrounding nonlinear modeling and its practical applications. This

collaboration not only contributed to a better understanding of a broad field of degradation processes but also strengthened interregional cooperation and the exchange of knowledge between scientists and industry. The SAFEBRIDGE project is an example of scientific excellence, and its impacts are visible not only at the local level but also at the European level.

Project name: [LUAUS23114 The strain limit for advanced modelling of steel structures – deterministic and probabilistic approach](#)

Provider of the funding: The Ministry of Education, Youth and Sports; INTER-EXCELLENCE II

Years of realization: 01.03.2023 – 28.02.2027

The project focuses on preparing theoretical foundations for advanced design of steel structure connections, with an emphasis on determining the limiting strain ratio of steels. This approach allows for more efficient use of new materials, such as high-strength steels, in construction.

The key issue of the project is determining the limits of plastic deformation in steel structures. Existing methods rely on approximate stress estimation, while this project offers a direct prediction of load-bearing capacity based on relative reshaping. This approach fundamentally changes the design of structures sensitive to cross-sectional shape, including hot-rolled elements, slender compression elements, cold-formed elements, and hollow closed cross-sections.

The project also focuses on the properties of various types of steel, including structural and high-strength materials. An important aspect is the quality of the models used, including the sensitivity of the model to element selection, mesh size and analysis, whether considering or neglecting the effects of large deformations of the structure. For design at elevated temperatures, it is necessary to account for the degradation of the working diagram, heat conduction in the connection during fire, and its temperature profile.

The project focuses on a very current topic, resonating during the preparation of the Eurocode for finite element design method FprEN 1993-1-14:2024. The members of the research team are involved in the development of European and American standards. The FCE is responsible for experimental and extensive numerical research on steel components and connections using parameterized models, as well as the reliability analysis.

The results of the project provide direct and clear criteria for the assessment of beams and connections based on limits of relative reshaping. These limits are processed both deterministically and probabilistically, allowing their integration into building codes in the EU and the USA. The project thus contributes to improving the safety and efficiency of steel structure designs at an international level.

SELECTED CONTRACT RESEARCH PROJECTS

Long-term collaboration with DIAMO, s. p.

The collaboration with the state-owned company DIAMO is focused on the reopening of the polymetallic mine Zlaté Hory. The main activities include the technological and analytical support in the determination of metallicities in the deposit ZH Sever, where a detailed analysis of mineral composition has been carried out. Key part of the research is a preparation of a study dedicated to the use of flotation sludge in the construction industry.

Flotation sludges are analyzed for their potential use in polymer, polymer-cement and cement composites with respect to their residual sulfide content, which may affect their properties. Another part of the project is a preparation of methodologies for the preparation of landfill mixtures for the filling of excavated areas. These mixtures are designed either to have static function enabling stabilization of excavated areas, or without the static function for a simple fill-in.

The project includes a definition of requirements for landfill mixtures and technological methods of their production. The results of the project might help the efficiency of mining and minimize the ecological effects of the mining processes, especially through an effective use of waste materials. The

long-term aim is to produce sustainable technologies with potential to be further applied in similar projects.

Long-term collaboration with the State Office for Nuclear Safety

Since 2016, the faculty provides an expert support for the activities of the State Office for Nuclear Safety (SÚJB) within contract research. This collaboration follows international standards and documents of the International Atomic Energy Agency (IAEA) and focuses on research and experimental development with regard to strengthen the supervision over the safety of nuclear power plants in the Czech Republic.

Key part of the cooperation is the practical application of knowledge of own experimental research into supervisory mechanisms and methodologies. These procedures include the analysis of current supervisory mechanisms, risks and uncertainty identification, and proposals of innovative measures. It is a systematic activity comprising detailed research of the problematics, analysis of current procedures and preparation of effective solutions corresponding with current scientific knowledge. When eligible, the solutions proposed are implemented directly into existing methodologies, securing a long-term safety of nuclear facilities.

One of the key stages of this collaboration was the analysis of containment leakage of nuclear power plant Temelín. The research included professional evaluation of the documentation provided by the SÚJB, including the evaluation of the hermetic envelope under integrity test conditions and maximum design basis accident. Moreover, an external technical help during the negotiations with the CEZ group, a holder of operation permit of the power plant, was provided as well as with company's suppliers regarding solving leaks in the hermetic spaces of the protective envelope.

Another part of the research was the assessment of consequences of the LOCA (Loss of Coolant Accident) 2x850 mm due to leaks in the hermetic spaces of the protective envelope. This assessment contributed to the improvement of methodologies of safety evaluation and strengthening the supervision over operation of nuclear facilities which ensures a higher level of safety corresponding to international standards.

Contract research of economic potential and technical parameters of new port area in Hamburg

The project for the Waterways Directorate of the Czech Republic focused on analysis of economic potential and technical parameters of new port area in Hamburg which is aimed to serve as a replacement of existing Czech port areas used according to the international agreements following the Versailles Treaty.

New location in the area of Kuhwerder Hafen will offer a modern port enabling more efficient trade between Czech Republic, Europe, and the overseas using sea transport. The port has a significant strategic importance for the Czech Republic as it is the only access to the ocean secured by international contract.

As part of the project, a unique methodology for financial and economic analysis was developed. This included not only the direct costs of managing the infrastructure of the Waterways Directorate of the Czech Republic (the infrastructure manager), but also the residual value of the assets built by the Czech Republic in the port, which will be settled as part of the exchange. The economic analysis covered the traditional socioeconomic impacts of water infrastructure projects, as well as other specific savings, such as reduced costs for container transport on the Hamburg–Riesa and Hamburg–Ústí nad Labem routes, or advantages in the transport of oversized cargo. The analysis also considered the impact on the competitiveness of strategic industrial sectors in the Czech Republic.

The result of the project is the "Analysis of marketing potential and technical parameters of the new port area of the Czech Republic in Hamburg", a document, which serves as a foundation for the establishment of the new port area. It has a strategic significance for the growth of Czech waterborne transport and for connecting European trade with the overseas.

Researchers from the Institute of Construction Economics and Management of BUT participated in the project within the Science Centre AdMaS, together with German company Wagener & Herbst

Management Consultants GmbH and Sweco Hydroprojekt company. Such collaboration guaranteed highly professional elaboration and relevance of the results.

Contract research for the Fels Vertriebs und Service GmbH & Co. KG company

The research for the company FELS included services related to the operation of the laboratory, the work of the researcher, and the autoclaving of test samples. Main goal was to verify the impact of new types of quicklime on the properties of autoclaved aerated concrete. In order to fulfill the rules of the Green Deal, the FELS company had to adjust the manufacturing technology of quicklime which led to significant changes of its fundamental properties and behavior, especially in fresh quicklime blends.

During the research, individual recipes and preparation technologies were analyzed in order to reach optimal parameters of fresh blends and the final product. The cooperation with BUT enabled FELS conduct a simulation of conditions of experiments which correspond with the future operation of the production plant. The cooperation provided key results for the technology adjustment which led to a reduction of waste production and energy consumption.

Efficient and fast adjustments of the technology were verified by test casts in manufacturing facilities which was significant for achieving high quality aerated concrete. The results of the research not only meet the sustainability requirements of Green Deal but also bring significant economic savings as well as the improvement of processes in the manufacturing practice.

Contract research during the construction of ARENA BRNO

[Arena Brno](#) is a planned multifunctional hall located in the Pisárky quarter. The modern complex in the vicinity of Brno Exhibition Centre is aimed for sports and cultural events, but also for trade fairs and other events, with thirty planned uses.

The total investment in the project counts 5.75 billion CZK, of which 3 billion are provided by Brno and 2 billion are provided as a loan. 200 million CZK will be provided by South Moravian Region, 300 million will be provided as a subsidy by National Sports Agency.

The designed capacity of the hall is 13,300 viewers. The project was proposed by the A PLUS and the Arch.Design companies and its implementation is ensured by the HOCHTIEF CZ company.

Construction works officially began on 18 September 2023 with the laying of the foundation stone. The project also includes the construction of 1,300 parking spaces, out of which 150 will be located inside of the hall. The faculty contributed to this strategic project by providing a security assessment focused on the evacuation of persons from the building in case of fire or other emergency situations. This assessment included simulations of numeric models and analysis of efficiency of fire ventilation which is aimed to ensure safe conditions during the evacuation process. These studies contributed significantly to a high level of safety and comfort for visitors in the future.

Table 3.3.1 Projects supported by public funds

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
Horizon 2020		2 267 / 89 410	0 / 0	79 / 3 136	0 / 0	0 / 0

25 If the provider is from abroad, please indicate the provider's country of origin in brackets. For the determination of the country of origin of the provider, the place of residence of the provider is decisive.

26 Indicate the total amount expressed in thousands of CZK and the conversion of the total amount into Euro.

INTER EXCELLENCE programme		0 / 0	1 011 / 39 898	1 382 / 54 514	1 475 / 58 177	0 / 0
The Czech Science Foundation programmes		27 604 / 1 088 906	24 917 / 982 925	21 545 / 849 899	20 381 / 803 966	24 423 / 963 432
The Technology Agency of the Czech Republic programmes		15 725 / 620 306	21 830 / 861 129	15 268 / 602 272	12 363 / 487 676	11 507 / 453 918
The Ministry of Culture programmes		3 861 / 152 297	3 921 / 154 667	2 777 / 109 561	0 / 0	0 / 0
The Ministry of Regional Development programmes		0 / 0	315 / 12 444	352 / 13 867	92 / 3 613	0 / 0
The Ministry of the Interior programmes		611 / 24 110	1 379 / 54 400	1 451 / 57 251	1 831 / 72 227	0 / 0
The Ministry of Agriculture programmes		76 / 30 217	0 / 0	800 / 31 558	800 / 31 558	800 / 31 558
The Ministry of Foreign Affairs programmes		0 / 0	0 / 0	0 / 0	1 391 / 54 854	1 483 / 58 505
Other national and international programmes		44 166 / 1 742 247	16 363 / 645 501	14 983 / 591 040	14 555 / 574 170	14 062 / 554 703
Total		94 310 / 3 747 493	69 736 / 2 750 964	58 637 / 2 313 098	52 888 / 2 086 241	52 275 / 2 062 116
In the role of another participant						
Provider ²⁷	Project name	Support (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
Horizon 2020		0 / 0	0 / 0	0 / 0	0 / 0	57 / 22 266
Programme Interreg		4 082 / 161 039	3 431 / 135 357	1 995 / 78 689	613 / 24 198	0 / 0
Programme INTER EXCELLENCE		0 / 0	0 / 0	0 / 0	0 / 0	625 / 24 655
The Czech Science Foundation programmes		3 686 / 145 404	5 303 / 209 191	4 907 / 193 570	5 712 / 225 325	4 499 / 177 475
The Technology Agency of the Czech Republic programmes		47 639 / 1 879 247	64 852 / 2 558 257	53 287 / 2 102 068	49 173 / 1 939 770	41 000 / 1 617 375
The Ministry of Industry and Trade programmes		35 444 / 1 398 166	30 375 / 1 198 220	17 356 / 684 651	5 709 / 225 224	0 / 0
The Ministry of the Interior programmes		1 802 / 71 101	0 / 0	0 / 0	450 / 17 767	1 262 / 49 799
The Ministry of Agriculture programmes		283 / 11 164	283 / 11 164	204 / 8 047	0 / 0	0 / 0
Other national and international programmes		7 / 276	0 / 0	0 / 0	9 / 355	9 / 355
Total		92 943 / 3 666 397	104 244 / 4 112 189	77 749 / 3 067 025	61 666 / 2 432 639	47 452 / 1 891 925

²⁷ Ibid.

Table 3.3.2 - Contract research activities

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
1. Geo, spol. s r.o.	CZ01573161	940 / 37081	0 / 0	0 / 0	0 / 0	0 / 0
3i - Isolet, s.r.o.	CZ27211371	18 / 710	0 / 0	0 / 0	45 / 1775	0 / 0
3V & H, s.r.o.	CZ46992715	25 / 986	0 / 0	1 / 47	0 / 0	0 / 0
A.W. spol. s r.o.	CZ13642031	17 / 682	0 / 0	0 / 0	0 / 0	0 / 0
AAA STUDIO, s.r.o.	CZ25340603	26 / 1006	0 / 0	0 / 0	0 / 0	0 / 0
Advanced Medical Solutions s.r.o.	CZ29251524	0 / 0	390 / 15385	0 / 0	0 / 0	0 / 0
AFRY CZ s.r.o.	CZ45306605	0 / 0	0 / 0	0 / 0	0 / 0	189 / 7436
AGROMELIO, s.r.o.	SK2021934156	0 / 0	15 / 596	0 / 0	0 / 0	0 / 0
AGSTAV TŘEBÍČ a.s.	CZ46966676	48 / 1893	0 / 0	0 / 0	81 / 3211	0 / 0
Akson, s.r.o.	CZ27548082	65 / 2564	0 / 0	0 / 0	0 / 0	0 / 0
ALAS SLOVAKIA, s.r.o.	SK2020260792	758 / 29910	980 / 38676	503 / 19853	403 / 15882	422 / 16656
Allega GmbH	CHE102309207	0 / 0	0 / 0	0 / 0	0 / 0	9 / 336
Alpamare cz spol. s r.o.	CZ25412825	0 / 0	0 / 0	18 / 712	0 / 0	0 / 0
ALUMISTR SE	CZ29290261	50 / 1953	0 / 0	0 / 0	0 / 0	0 / 0
AMBERG Engineering Brno, a.s.	CZ49446703	40 / 1578	0 / 0	0 / 0	0 / 0	0 / 0
amp build s.r.o.	CZ04800753	0 / 0	5 / 185	7 / 261	0 / 0	0 / 0
Applied Sunrise Technologies a.s.	CZ27664911	390 / 15385	390 / 15385	490 / 19329	0 / 0	0 / 0
AQUA PROCON s.r.o.	CZ46964371	0 / 0	0 / 0	19 / 750	0 / 0	0 / 0
AQUAMONITORING, s.r.o.	CZ29366810	19 / 757	0 / 0	0 / 0	0 / 0	0 / 0
AQUATIS a.s.	CZ46347526	0 / 0	49 / 1933	0 / 0	0 / 0	995 / 39250
Arch.Design, s.r.o.	CZ25764314	0 / 0	224 / 8836	210 / 8284	0 / 0	0 / 0
ARCHATT, s.r.o.	CZ46960180	0 / 0	9 / 372	0 / 0	0 / 0	0 / 0
ASIO NEW, spol. s r.o.	CZ29303125	390 / 15385	0 / 0	390 / 15385	0 / 0	0 / 0
Asociace stavebních alternativních	CZ72027738	0 / 0	0 / 0	0 / 0	0 / 0	5 / 197
ASS OPERA DE LYON	FR62339391021	0 / 0	0 / 0	5 / 200	0 / 0	0 / 0

28 If the client is from abroad, indicate in brackets the country of origin of the client.

ATELIER SIMONA – projekce a inženýr	CZ25368931	15 / 582	0 / 0	0 / 0	0 / 0	0 / 0
B E S P L A S T s.r.o.	CZ46982655	32 / 1262	0 / 0	0 / 0	0 / 0	0 / 0
BERGER BOHEMIA a. s.	CZ45357269	0 / 0	0 / 0	0 / 0	0 / 0	25 / 986
BEST, a.s.	CZ699000797	1684 / 66449	1535 / 60557	1776 / 70057	1621 / 63947	1868 / 73674
BETONIKA plus s.r.o.	CZ60777133	105 / 4132	0 / 0	0 / 0	0 / 0	0 / 0
BETONIKA spol. s r.o.	CZ00561681	0 / 0	23 / 893	4 / 168	0 / 0	13 / 503
BETONOVÉ STAVBY – GROUP, s.r.o.	CZ64834131	0 / 0	0 / 0	11 / 428	0 / 0	0 / 0
BETONPARTNER MAGYARORSZÁG Kft.	HU13795067	0 / 0	0 / 0	0 / 0	55 / 2151	0 / 0
BETONTEST, spol. s r.o.	CZ25526332	0 / 0	3 / 110	0 / 0	0 / 0	3 / 130
BETOSAN s.r.o.	CZ48028177	0 / 0	0 / 0	0 / 0	5 / 197	0 / 0
BETVAR a. s.	CZ63080087	236 / 9312	0 / 0	193 / 7604	225 / 8886	258 / 10171
Bionic E&M spol. s r.o.	CZ26925532	120 / 4734	0 / 0	0 / 0	0 / 0	0 / 0
Brněnské komunikace a.s.	CZ60733098	1924 / 75897	140 / 5523	0 / 0	0 / 0	69 / 2739
Brněnské vodárny a kanalizace, a.s.	CZ46347275	636 / 25089	1241 / 48955	0 / 0	0 / 0	0 / 0
Bronze cz s.r.o.	CZ06604676	40 / 1578	0 / 0	0 / 0	0 / 0	0 / 0
BSL Industrie a.s.	CZ29362865	0 / 0	0 / 0	0 / 0	0 / 0	16 / 611
cadconsulting, spol. s r.o.	CZ24249343	0 / 0	16 / 631	0 / 0	0 / 0	0 / 0
CAMAXIS, s.r.o.	CZ03260283	0 / 0	0 / 0	490 / 19329	0 / 0	0 / 0
Cement Hranice, a.s.	CZ15504077	0 / 0	0 / 0	50 / 1955	78 / 3090	0 / 0
Cemex Czech Republic s.r.o.	CZ27892638	1132 / 44656	1253 / 49411	1179 / 46527	1397 / 55106	2695 / 106292
CIDEM Hranice, a. s.	CZ14617081	0 / 0	0 / 0	0 / 0	45 / 1787	0 / 0
Cité du design	FR57200023521	0 / 0	0 / 0	36 / 1401	0 / 0	0 / 0
CIUR a.s.	CZ40612724	0 / 0	395 / 15582	389 / 15345	480 / 18935	0 / 0
COLAS CZ. a.s.	CZ26177005	3 / 118	3 / 111	12 / 465	9 / 355	0 / 0
COMDES CZ s.r.o.	CZ27119840	20 / 789	0 / 0	0 / 0	0 / 0	0 / 0
CONSULTEST AG	CHE106092171	188 / 7402	0 / 0	0 / 0	0 / 0	0 / 0
CONSULTEST s.r.o.	CZ25346784	115 / 4540	71 / 2807	219 / 8647	1445 / 56984	120 / 4738
CT Project s.r.o.	CZ03268012	0 / 0	0 / 0	0 / 0	0 / 0	55 / 2170

ČEGAN s.r.o.	CZ26274744	50 / 1972	90 / 3550	399 / 15740	0 / 0	0 / 0
Červenka Consulting s.r.o.	CZ28399269	100 / 3945	0 / 0	0 / 0	0 / 0	0 / 0
České vysoké učení technické	CZ68407700	483 / 19060	390 / 15390	98 / 3875	30 / 1183	18 / 710
Český metrologický institut	CZ00177016	0 / 0	0 / 0	0 / 0	0 / 0	15 / 592
ČEVAK a.s.	CZ60849657	9 / 355	0 / 0	0 / 0	0 / 0	0 / 0
ČEZ Energetické produkty, s. r. o.	CZ28255933	0 / 0	35 / 1381	0 / 0	0 / 0	0 / 0
ČEZ, a. s.	CZ45274649	98 / 3866	0 / 0	0 / 0	0 / 0	0 / 0
Danucem Slovensko a.s.	SK7120000041	74 / 2923	0 / 0	0 / 0	7 / 289	0 / 0
DEK a.s.	CZ699000797	0 / 0	90 / 3540	0 / 0	0 / 0	0 / 0
DEKPROJEKT s.r.o.	CZ699000797	0 / 0	6 / 252	0 / 0	0 / 0	0 / 0
DELIMAX a.s.	CZ26916371	0 / 0	0 / 0	883 / 34843	0 / 0	620 / 24458
Developer Brno Hády, a.s.	CZ26979438	0 / 0	0 / 0	0 / 0	9 / 355	0 / 0
DEZA, a.s.	CZ00011835	0 / 0	0 / 0	0 / 0	745 / 29389	0 / 0
DHI a.s.	CZ64948200	9 / 351	0 / 0	0 / 0	0 / 0	0 / 0
DIAMO, státní podnik	CZ00002739	0 / 0	0 / 0	0 / 0	116 / 4580	754 / 29736
DITON s.r.o.	CZ25557921	84 / 3320	138 / 5431	192 / 7563	167 / 6594	193 / 7621
DokFi s.r.o.	CZ29226155	0 / 0	0 / 0	0 / 0	3 / 118	0 / 0
DOLESTAV SY s.r.o.	CZ27785874	0 / 0	0 / 0	0 / 0	28 / 1097	0 / 0
Domov pro seniory Vlčice, příspěvkovo	CZ49180380	3 / 130	0 / 0	0 / 0	0 / 0	0 / 0
Dopravní podnik města Brna,a.s.	CZ25508881	0 / 0	35 / 1381	0 / 0	0 / 0	0 / 0
Dopravní podnik Ostrava a.s.	CZ61974757	0 / 0	0 / 0	0 / 0	0 / 0	144 / 5680
DT – Výhybkárna a strojírna, a.s.	CZ46962778	214 / 8422	130 / 5128	5 / 197	0 / 0	10 / 375
EASYCON Solution s.r.o.	CZ04401930	390 / 15385	0 / 0	0 / 0	0 / 0	0 / 0
EGÚ Brno,a.s.	CZ46900896	282 / 11124	635 / 25041	0 / 0	0 / 0	53 / 2091
Ekologický rozvoj a výstavba s.r.o.	CZ27504514	390 / 15385	0 / 0	0 / 0	0 / 0	490 / 19329
EMBRA Company a.s.	CZ08696306	0 / 0	0 / 0	11 / 446	0 / 0	0 / 0
EP Cargo Trucking CZ s.r.o.	CZ49815172	0 / 0	0 / 0	7 / 256	0 / 0	0 / 0
EP Resources CZ a.s.	CZ04411137	0 / 0	0 / 0	0 / 0	77 / 3053	0 / 0
ERC BETON s.r.o.	CZ07726716	0 / 0	0 / 0	24 / 946	0 / 0	0 / 0

ERC-TECH a.s.	CZ07159579	0 / 0	15 / 572	0 / 0	0 / 0	0 / 0
ESAP Consult, s. r. o.	CZ27809307	0 / 0	0 / 0	0 / 0	490 / 19329	0 / 0
ESD Osvětlimany s.r.o.	CZ26944804	4 / 158	4 / 158	4 / 138	0 / 0	8 / 316
EuroArmatúry s.r.o., organizační sl	CZ24688487	40 / 1578	0 / 0	0 / 0	0 / 0	0 / 0
EUROVIA CS, a. s.	CZ45274924	0 / 0	0 / 0	0 / 0	10 / 394	0 / 0
EUROVIA Kamenolomy, a.s.	CZ27096670	0 / 0	96 / 3791	0 / 0	0 / 0	0 / 0
Fels Vertriebs und Service GmbH & C	DE310774362	0 / 0	21 / 827	61 / 2398	89 / 3501	0 / 0
FEM consulting, s.r.o.	CZ44961464	0 / 0	0 / 0	0 / 0	0 / 0	195 / 7692
Fibertex Nonwovens, a.s.	CZ48173118	0 / 0	25 / 978	36 / 1400	0 / 0	0 / 0
Financial Consortium s.r.o.	CZ04023242	0 / 0	0 / 0	20 / 789	0 / 0	0 / 0
FINO-trade s.r.o.	CZ41601742	28 / 1099	17 / 689	68 / 2669	12 / 486	0 / 0
FIRESTA-Fišer,	CZ25317628	0 / 0	0 / 0	49 / 1933	38 / 1483	0 / 0
Floor Technology s.r.o.	CZ24286494	0 / 0	0 / 0	0 / 0	0 / 0	7 / 271
FLSmidth spol. s r.o.	CZ00346624	0 / 0	0 / 0	0 / 0	6 / 237	0 / 0
FONTANA R, s.r.o.	CZ47911972	0 / 0	0 / 0	0 / 0	0 / 0	490 / 19329
FRBT production s.r.o.	CZ11944218	0 / 0	0 / 0	0 / 0	83 / 3293	267 / 10545
FRISCHBETON s.r.o.	CZ40743187	196 / 7733	204 / 8040	279 / 10996	341 / 13436	727 / 28692
GEMO a.s.	CZ13642464	43 / 1677	64 / 2505	34 / 1351	19 / 738	22 / 852
Generali Česká pojišťovna a.s.	CZ699001273	0 / 0	0 / 0	35 / 1381	0 / 0	0 / 0
GEOtest, a.s.	CZ46344942	0 / 0	0 / 0	0 / 0	0 / 0	45 / 1775
GODELMANN CZ, s.r.o.	CZ26414490	0 / 0	0 / 0	0 / 0	0 / 0	7 / 276
GOLDBECK Prefabeton s.r.o.	CZ49823329	0 / 0	0 / 0	0 / 0	0 / 0	50 / 1953
GöteborgsOperan Aktiebolag	SE556121782801	0 / 0	0 / 0	101 / 4002	0 / 0	0 / 0
Hansa Luftbild AG	DE209087852	452 / 17819	0 / 0	0 / 0	0 / 0	0 / 0
HBCZ SERVICE spol. s r.o.	CZ07594763	0 / 0	0 / 0	0 / 0	1470 / 57988	0 / 0
HCS spol. s r.o.	CZ47914343	20 / 783	0 / 0	0 / 0	0 / 0	0 / 0
Heidelberg Materials CZ, a.s.	CZ26209578	54 / 2131	22 / 852	22 / 852	22 / 852	24 / 947
Helske FACILITY, s.r.o.	SK2120775910	24 / 946	0 / 0	0 / 0	0 / 0	0 / 0

HELUZ cihlářský průmysl v.o.s.	CZ46680004	17 / 679	0 / 0	15 / 584	0 / 0	0 / 0
HERMES TECHNOLOGIE s.r.o.	CZ25104381	66 / 2603	0 / 0	77 / 3021	29 / 1141	0 / 0
HG partner s. r. o.	CZ27221253	0 / 0	0 / 0	54 / 2130	0 / 0	0 / 0
HIRDEA Materials s.r.o.	CZ07610254	0 / 0	26 / 1007	17 / 677	16 / 619	7 / 256
HLINĚNÝ DŮM s.r.o.	CZ06996426	0 / 0	8 / 323	7 / 258	0 / 0	0 / 0
HOCHTIEF CZ a.s.	CZ46678468	119 / 4696	0 / 0	72 / 2841	13 / 513	47 / 1855
Holcim (Česko), a.s.	CZ14867494	0 / 0	0 / 0	0 / 0	615 / 24260	0 / 0
HT WOOD, s.r.o.	CZ29263999	0 / 0	0 / 0	4 / 146	0 / 0	0 / 0
Huntsman Building Solutions	CZ07398131	0 / 0	0 / 0	100 / 3937	96 / 3805	0 / 0
HYCOPROJEKT, akciová společnost	SK2020311722	106 / 4193	0 / 0	0 / 0	0 / 0	0 / 0
CHRYSO Chemie, s.r.o.	CZ25097555	0 / 0	10 / 394	231 / 9125	258 / 10176	237 / 9343
ICE Industrial Services a.s.	CZ29158541	0 / 0	0 / 0	0 / 0	120 / 4734	310 / 12239
IDEA StatiCa, s.r.o.	CZ28356586	0 / 0	0 / 0	0 / 0	165 / 6520	0 / 0
II&ME LTD – odštěpný závod zahraniční	CZ03868397	0 / 0	0 / 0	8 / 326	0 / 0	0 / 0
IMC Holding spol. s r.o.	CZ45276927	0 / 0	0 / 0	69 / 2722	0 / 0	0 / 0
ING & PARTNERS s.r.o.	CZ24270482	0 / 0	5 / 182	0 / 0	0 / 0	0 / 0
Ing. Akad. arch. ŠÉPKA JAN	CZ6910290486	82 / 3243	0 / 0	0 / 0	0 / 0	0 / 0
Ing. arch. Radko Květ	CZ5410110167	0 / 0	125 / 4931	0 / 0	0 / 0	0 / 0
Ing. Hugo Thiel	CZ5611062248	0 / 0	0 / 0	64 / 2522	0 / 0	55 / 2170
Ing. Michal Němec	CZ7412172922	15 / 581	0 / 0	26 / 1029	25 / 994	0 / 0
Ing. Pavel Kurečka MOSTY s. r. o.	CZ27764613	34 / 1357	0 / 0	0 / 0	0 / 0	0 / 0
Ing. Petr Herka	CZ6401020230	0 / 0	5 / 178	5 / 205	0 / 0	0 / 0
Ing. Radomír Rucki	CZ5807031032	0 / 0	0 / 0	0 / 0	7 / 271	0 / 0
Ing. Tomáš Znajda, Ph.D.	CZ687647745	0 / 0	0 / 0	15 / 592	0 / 0	0 / 0
Ing. Ivana Václavková	CZ449698486	0 / 0	0 / 0	0 / 0	0 / 0	60 / 2367
Ing. Libor Matějka	CZ6010120655	0 / 0	0 / 0	4 / 163	0 / 0	0 / 0
IN-CHEMIE Technology s.r.o.	CZ05638640	0 / 0	85 / 3373	955 / 37673	0 / 0	0 / 0
innogy Česká republika a.s.	CZ24275051	33 / 1302	0 / 0	0 / 0	0 / 0	0 / 0
Institut	CZ47910381	0 / 0	0 / 0	0 / 0	8 / 331	0 / 0

Institut technologie a testování be	CZ14098920	0 / 0	0 / 0	0 / 0	0 / 0	67 / 2660
INTEN GROUP s.r.o.	CZ29314011	0 / 0	0 / 0	30 / 1188	0 / 0	0 / 0
INTERTECH PLUS s.r.o.	CZ25597612	0 / 0	0 / 0	25 / 986	30 / 1183	0 / 0
IP systém a.s.	CZ26787971	0 / 0	0 / 0	0 / 0	0 / 0	12 / 458
ITS – Intelligent Transport Systems	CZ03211223	0 / 0	0 / 0	0 / 0	76 / 2998	0 / 0
JAP FUTURE s.r.o.	CZ05533139	0 / 0	0 / 0	42 / 1671	0 / 0	0 / 0
Jihomoravský kraj	CZ70888337	0 / 0	41 / 1629	36 / 1423	383 / 15108	0 / 0
JIKA – CZ s.r.o.	CZ25917234	0 / 0	0 / 0	28 / 1093	0 / 0	0 / 0
Jiří Purket	CZ708409897	0 / 0	0 / 0	48 / 1893	0 / 0	0 / 0
JUDr. Martin Nový	CZ6912293960	4 / 138	0 / 0	0 / 0	0 / 0	0 / 0
KAMENA výrobní družstvo Brno	CZ00030449	31 / 1218	34 / 1325	31 / 1214	0 / 0	0 / 0
Kancelář architekta města Brna,	CZ05128820	0 / 0	34 / 1341	0 / 0	0 / 0	0 / 0
Karovič, s.r.o.	SK2022303965	49 / 1949	0 / 0	0 / 0	0 / 0	0 / 0
KA-SE kanalservis s.r.o.	CZ60723041	0 / 0	0 / 0	0 / 0	0 / 0	490 / 19329
KAZBET GROUP s.r.o.	CZ25926233	0 / 0	0 / 0	0 / 0	140 / 5523	0 / 0
Keller Grundbau Gesellschaft m.b.H.	ATU14489506	55 / 2155	60 / 2350	0 / 0	0 / 0	136 / 5355
KELLER-speciální zakládání,	CZ49702190	100 / 3945	0 / 0	0 / 0	0 / 0	0 / 0
Keraming a.s.	SK2020384531	0 / 0	0 / 0	0 / 0	0 / 0	20 / 797
Kingspan a.s.	CZ64829201	0 / 0	0 / 0	0 / 0	0 / 0	25 / 986
KINGSPAN LIMITED	IE9Y21282Q	0 / 0	0 / 0	0 / 0	186 / 7356	0 / 0
KLIPA STAV s.r.o.	CZ04066669	0 / 0	6 / 252	0 / 0	0 / 0	0 / 0
KMM Investing, s.r.o.	CZ01380796	0 / 0	0 / 0	100 / 3945	0 / 0	0 / 0
KOCMAN envimonitoring s.r.o.	CZ03108279	9 / 351	0 / 0	0 / 0	0 / 0	0 / 0
KOMPAN A/S	DK40559817	39 / 1554	0 / 0	0 / 0	0 / 0	0 / 0
Kovoprojekta Brno a.s.	CZ46347011	46 / 1822	0 / 0	0 / 0	0 / 0	0 / 0
KRONOSPAN OSB, spol. s r.o.	CZ26936364	0 / 0	0 / 0	0 / 0	0 / 0	75 / 2959
KRUŽÍK s.r.o.	CZ26943115	201 / 7947	0 / 0	152 / 5990	0 / 0	0 / 0
KŠ PREFA s.r.o.	CZ29024064	8 / 298	0 / 0	11 / 429	0 / 0	0 / 0
LB Cemix, s.r.o.	CZ27994961	0 / 0	17 / 676	54 / 2133	30 / 1186	10 / 391

Leube Beton s.r.o.	CZ60714026	25 / 975	0 / 0	0 / 0	0 / 0	0 / 0
Lidl Česká republika v.o.s.	CZ26178541	0 / 0	0 / 0	0 / 0	22 / 880	0 / 0
Lightway s. r. o.	CZ63669366	390 / 15385	0 / 0	0 / 0	0 / 0	0 / 0
LIKO-S, a.s.	CZ60734795	290 / 11440	0 / 0	0 / 0	0 / 0	0 / 0
Lime Business Consulting s.r.o.	CZ29351987	0 / 0	0 / 0	495 / 19527	0 / 0	0 / 0
Linio Plan, s.r.o.	CZ27738809	273 / 10785	0 / 0	0 / 0	0 / 0	0 / 0
Link projekt s.r.o.	CZ27678032	0 / 0	64 / 2525	0 / 0	0 / 0	0 / 0
Litostroj Engineering a.s.	CZ25305034	850 / 33531	0 / 0	0 / 0	0 / 0	0 / 0
LOBSTAV, spol. s r. o.	CZ41603010	0 / 0	0 / 0	0 / 0	0 / 0	7 / 276
LP – STEEL a.s.	CZ26225913	0 / 0	0 / 0	0 / 0	2 / 77	0 / 0
Luonnonvarakeskus	FI02446292	72 / 2837	0 / 0	0 / 0	0 / 0	0 / 0
MAPEI SK, s.r.o.	SK2020258405	1046 / 41247	34 / 1339	316 / 12464	26 / 1016	0 / 0
MAPEI, spol. s r.o.	CZ13642715	467 / 18417	534 / 21067	300 / 11818	76 / 3001	374 / 14740
Masarykova univerzita	CZ00216224	0 / 0	0 / 0	9 / 355	0 / 0	0 / 0
MBL spol. s r.o.	CZ26312956	0 / 0	0 / 0	0 / 0	6 / 229	0 / 0
MC – Bauchemie s.r.o.	CZ62619934	132 / 5220	8 / 316	3 / 105	135 / 5336	0 / 0
Mendelova univerzita v Brně	CZ62156489	200 / 7890	0 / 0	20 / 781	0 / 0	34 / 1333
Město Kroměříž	CZ00287351	124 / 4885	0 / 0	19 / 738	0 / 0	0 / 0
Město Kuřim	CZ00281964	0 / 0	0 / 0	79 / 3097	0 / 0	0 / 0
Město Litovel	CZ00299138	59 / 2323	0 / 0	0 / 0	0 / 0	0 / 0
Město Nové Strašecí	CZ00244155	0 / 0	0 / 0	7 / 268	0 / 0	0 / 0
Město Tišnov	CZ00282707	0 / 0	0 / 0	0 / 0	0 / 0	19 / 734
Město Veselí nad Moravou	CZ00285455	0 / 0	0 / 0	0 / 0	410 / 16174	0 / 0
Město Žacléř	CZ00278491	0 / 0	197 / 7771	0 / 0	0 / 0	0 / 0
Městys Křivoklát	CZ00243973	17 / 671	0 / 0	0 / 0	0 / 0	0 / 0
Městys Peruc	CZ00265331	0 / 0	544 / 21460	55 / 2170	1241 / 48955	85 / 3353
METROPROJEKT Praha a.s.	CZ45271895	21 / 828	0 / 0	0 / 0	0 / 0	0 / 0
Metrostav a.s.	CZ00014915	0 / 0	0 / 0	17 / 684	0 / 0	0 / 0
Metrostav a.s.- org. složka	SK2020253301	0 / 0	0 / 0	0 / 0	0 / 0	192 / 7574
Metrostav DIZ s.r.o.	CZ25021915	0 / 0	0 / 0	0 / 0	0 / 0	5 / 197

Metrostav TBR a.s.	CZ09884572	0 / 0	0 / 0	0 / 0	0 / 0	344 / 13580
MFC-MORFICO s.r.o.	CZ25507494	7 / 276	0 / 0	0 / 0	0 / 0	0 / 0
MINISTERSTVO PRŮMYSLU A OBCHODU	CZ47609109	0 / 0	0 / 0	0 / 0	45 / 1775	0 / 0
Mitrenga-stavby, spol. s r.o.	CZ26944022	10 / 394	0 / 0	368 / 14517	0 / 0	0 / 0
Monolithy – Bau, s.r.o.	CZ04303156	0 / 0	3 / 118	0 / 0	0 / 0	0 / 0
MORAVIA CANS a.s.	CZ46900616	29 / 1132	0 / 0	0 / 0	0 / 0	0 / 0
MORAVIA CONSULT Olomouc a.s.	CZ64610357	0 / 0	0 / 0	455 / 17949	0 / 0	0 / 0
MORAVSKÁ VÝROBNÍ, a.s.	CZ25837052	0 / 0	2 / 65	0 / 0	0 / 0	0 / 0
Mostní a silniční, s.r.o.	CZ26274337	0 / 0	0 / 0	50 / 1955	49 / 1951	0 / 0
Mostní vývoj, s.r.o.	CZ26282097	0 / 0	0 / 0	0 / 0	0 / 0	10 / 391
Muzeum umění Olomouc	CZ75079950	0 / 0	0 / 0	0 / 0	9 / 343	0 / 0
N E K A P, spol. s r.o.	CZ44797257	50 / 1953	0 / 0	0 / 0	0 / 0	0 / 0
NÁRODNÍ MUZEUM	CZ00023272	0 / 0	0 / 0	0 / 0	0 / 0	100 / 3945
Němec s.r.o.	CZ25637762	0 / 0	0 / 0	395 / 15582	0 / 0	480 / 18935
Nová Zvonařka s.r.o.	CZ27686078	0 / 0	0 / 0	0 / 0	120 / 4734	0 / 0
Obec Viničné Šumice	CZ00488372	0 / 0	0 / 0	0 / 0	0 / 0	39 / 1541
OHLA ŽS, a.s.	CZ46342796	40 / 1578	22 / 850	0 / 0	28 / 1085	150 / 5914
OKM Group Brno, spol. s r.o.	CZ04095472	40 / 1578	0 / 0	0 / 0	0 / 0	0 / 0
OMV Downstream GmbH	ATU48359903	49 / 1923	0 / 0	0 / 0	0 / 0	0 / 0
oncomed manufacturing a.s.	CZ24711667	295 / 11637	0 / 0	0 / 0	0 / 0	0 / 0
Oulun Ammattikorkeakoulu Oy	FI25097478	487 / 19224	0 / 0	0 / 0	0 / 0	0 / 0
PARS aqua,s.r.o.	CZ64941400	30 / 1183	0 / 0	0 / 0	0 / 0	0 / 0
PAVUS, a.s.	CZ60193174	0 / 0	183 / 7210	41 / 1602	87 / 3432	79 / 3113
P-D Refractories CZ a.s.	CZ16343409	0 / 0	0 / 0	0 / 0	22 / 852	30 / 1166
PDSsystems s.r.o.	CZ27890546	0 / 0	0 / 0	0 / 0	1 / 39	0 / 0
PDV Stavby s.r.o.	CZ03717721	0 / 0	0 / 0	0 / 0	0 / 0	8 / 316
PEEM, spol. s r.o.	CZ47903627	239 / 9415	126 / 4956	0 / 0	73 / 2872	0 / 0

PERITO s.r.o.	CZ63483246	0 / 0	0 / 0	0 / 0	485 / 19132	0 / 0
PERLIT, spol. s r.o.	CZ41032225	80 / 3156	0 / 0	0 / 0	0 / 0	0 / 0
Petr Pupp	CZ6109011084	99 / 3923	109 / 4280	158 / 6227	0 / 0	0 / 0
PÍSEK ŽABČICE spol. s r.o.	CZ699006404	33 / 1302	70 / 2780	261 / 10309	214 / 8460	137 / 5398
Pískovna Černovice, spol. s r.o.	CZ60697318	0 / 0	24 / 947	28 / 1120	0 / 0	0 / 0
PK OSSENDORF s.r.o.	CZ25564901	14 / 560	0 / 0	0 / 0	0 / 0	0 / 0
PORFIX CZ a.s.	CZ60108924	22 / 848	0 / 0	0 / 0	0 / 0	0 / 0
PORR a.s.	CZ43005560	0 / 0	0 / 0	0 / 0	113 / 4477	55 / 2168
Povodí Labe, státní podnik	CZ70890005	0 / 0	0 / 0	0 / 0	138 / 5444	0 / 0
Povodí Moravy, s.p.	CZ70890013	165 / 6509	181 / 7120	0 / 0	105 / 4142	6 / 237
Povodí Odry, státní podnik	CZ70890021	0 / 0	0 / 0	50 / 1972	20 / 789	22 / 884
POZEMSTAV TŘEBÍČ, spol. s r. o.	CZ18127754	8 / 324	8 / 322	7 / 269	6 / 234	6 / 223
PRACTIC 99, s.r.o.	CZ60738766	0 / 0	7 / 290	7 / 271	0 / 0	0 / 0
Prefa Brno a.s.	CZ46901078	87 / 3417	325 / 12820	405 / 15981	255 / 10055	319 / 12596
PREFA Grygov a. s.	CZ45192723	99 / 3919	0 / 0	0 / 0	0 / 0	0 / 0
PREFA invest, a.s.	SK2023627771	65 / 2557	0 / 0	57 / 2241	0 / 0	0 / 0
PREFA KOMPOZITY,a.s.	CZ26949881	30 / 1183	0 / 0	0 / 0	0 / 0	0 / 0
PREFA PECINA s.r.o.	CZ28607317	0 / 0	35 / 1387	0 / 0	0 / 0	0 / 0
PRECHEZA a.s.	CZ26872307	33 / 1282	25 / 966	125 / 4931	145 / 5720	89 / 3519
PREMIOT těžební, a.s.	CZ05634113	0 / 0	0 / 0	0 / 0	0 / 0	77 / 3053
PRESBETON Drahotuše, s. r. o.	CZ26151201	92 / 3638	74 / 2920	134 / 5289	101 / 3976	94 / 3698
PRESBETON Nova, s.r.o.	CZ47152532	134 / 5278	0 / 0	112 / 4435	153 / 6029	98 / 3846
PRESTA-mix, spol. s r. o.	CZ26974509	0 / 0	69 / 2721	44 / 1740	64 / 2520	123 / 4859
PRIMIS spol. s r.o.	CZ02402718	45 / 1775	0 / 0	0 / 0	0 / 0	0 / 0
Profibaustoffe CZ,s.r.o.	CZ47912162	0 / 0	0 / 0	0 / 0	0 / 0	13 / 515
Průzkumy staveb s.r.o.	CZ29268125	0 / 0	19 / 742	13 / 529	8 / 308	6 / 229
PS BRNO, s.r.o.	CZ25506820	0 / 0	0 / 0	0 / 0	13 / 501	0 / 0
PSG a.s.	CZ28302371	0 / 0	0 / 0	5 / 211	0 / 0	0 / 0

PTÁČEK- velkoobchod, a.s.	CZ25501143	3 / 99	0 / 0	0 / 0	0 / 0	0 / 0
QCONTROL s.r.o.	CZ28311060	6 / 237	0 / 0	0 / 0	7 / 260	0 / 0
QUALIFORM, a.s.	CZ49450263	35 / 1371	466 / 18373	44 / 1731	104 / 4093	31 / 1208
RADKA spol. s r. o. Pardubice	CZ42937400	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Redrock Construction s.r.o.	CZ699002940	282 / 11134	132 / 5193	890 / 35108	24 / 947	840 / 33116
REFAGLASS s. r. o.	CZ29155576	0 / 0	0 / 0	85 / 3353	0 / 0	168 / 6619
REGUTEC a.s.	CZ05613345	0 / 0	0 / 0	63 / 2485	0 / 0	41 / 1619
REKO PRAHA, a. s.	SK2021920967	0 / 0	0 / 0	0 / 0	37 / 1447	55 / 2152
REKO PRAHA, a.s.	CZ61860271	120 / 4747	93 / 3671	40 / 1569	0 / 0	58 / 2302
Remmers s.r.o.	CZ25643011	0 / 0	3 / 99	0 / 0	0 / 0	0 / 0
RETEX a.s.	CZ46346431	0 / 0	0 / 0	0 / 0	144 / 5680	169 / 6682
RNDr. Pavla Rovnaníková, CSc.	CZ16304748	0 / 0	5 / 197	2 / 79	0 / 0	0 / 0
ROCK SALT, s.r.o.	CZ24138908	0 / 0	0 / 0	0 / 0	0 / 0	2 / 95
RONYTRANS, s.r.o.	CZ27703568	0 / 0	0 / 0	8 / 316	18 / 710	0 / 0
ROTOCAST a.s.	CZ26792508	0 / 0	0 / 0	9 / 373	0 / 0	0 / 0
Rušar mosty, s.r.o.	CZ29362393	95 / 3748	0 / 0	0 / 0	0 / 0	0 / 0
Ředitelství silnic a dálnic s. p.	CZ65993390	249 / 9834	0 / 0	0 / 0	0 / 0	485 / 19124
Ředitelství silnic Zlínského kraje	CZ70934860	0 / 0	0 / 0	0 / 0	0 / 0	692 / 27311
ŘEDITELSTVÍ VODNÍCH CEST	CZ67981801	0 / 0	3899 / 153807	0 / 0	265 / 10454	0 / 0
S.O.K. stavební, s.r.o.	CZ25548484	59 / 2308	0 / 0	0 / 0	0 / 0	0 / 0
SAINT-GOBAIN ADFORS CZ, s.r.o.	CZ00012661	0 / 0	0 / 0	147 / 5799	250 / 9866	71 / 2793
Saint-Gobain Construction	CZ25029673	0 / 0	55 / 2150	40 / 1565	48 / 1909	46 / 1822
SAMMIS s.r.o.	CZ05472806	0 / 0	0 / 0	12 / 475	0 / 0	0 / 0
SATTURN HOLEŠOV spol. s r.o.	CZ46900250	390 / 15385	537 / 21183	0 / 0	0 / 0	490 / 19329
SEMMELOCK STEIN +DESIGN Dlažby s.r	CZ27385621	136 / 5376	234 / 9214	263 / 10375	182 / 7160	0 / 0
SEMMELOCK STEIN+DESIGN	SK2020311777	0 / 0	142 / 5596	0 / 0	0 / 0	0 / 0
SEVARON s.r.o.	CZ25505289	0 / 0	6 / 252	0 / 0	0 / 0	0 / 0
Severomoravské vodovody a kanalizace	CZ45193665	345 / 13609	0 / 0	0 / 0	0 / 0	395 / 15582
Sika CZ, s.r.o.	CZ49437151	0 / 0	0 / 0	0 / 0	0 / 0	57 / 2233

Silniční vývoj - ZDZ spol. s r. o.	CZ64507181	2/71	0 / 0	0 / 0	0 / 0	0 / 0
SILO TRANSPORT, a.s.	CZ06256082	0 / 0	0 / 0	50 / 1992	0 / 0	0 / 0
Skanska a.s.	CZ699004845	0 / 0	60 / 2350	62 / 2442	10 / 404	268 / 10567
Skanska Transbeton, s.r.o.	CZ60471778	25 / 997	74 / 2933	81 / 3193	107 / 4232	7 / 271
SKR stav, s.r.o.	CZ26961474	0 / 0	0 / 0	0 / 0	12 / 468	0 / 0
Slovácké vodárny a kanalizace, a.s.	CZ49453866	0 / 0	0 / 0	0 / 0	59 / 2308	0 / 0
Slovenské elektrárne, a.s.	SK2020261353	0 / 0	0 / 0	0 / 0	0 / 0	455 / 17944
SLOVENSKÉ TUNELY a.s.	SK2020221060	16 / 631	0 / 0	0 / 0	0 / 0	0 / 0
SMART TECHNIK a.s.	CZ25577999	0 / 0	0 / 0	10 / 387	45 / 1783	9 / 351
Smětal s.r.o.	CZ26833581	0 / 0	0 / 0	0 / 0	48 / 1888	0 / 0
SMP CZ, a.s.	CZ27195147	0 / 0	1570 / 61943	0 / 0	0 / 0	0 / 0
SMP Vodohospodářské stavby a.s.	CZ11637471	0 / 0	0 / 0	0 / 0	0 / 0	10 / 394
Společenství vlastníků domu 28. říj	CZ109732318	0 / 0	0 / 0	0 / 0	5 / 197	0 / 0
Společenství vlastníků jednotek	CZ26289661	0 / 0	0 / 0	15 / 592	0 / 0	0 / 0
Společenství vlastníků jednotek Na	CZ26882523	0 / 0	0 / 0	6 / 243	0 / 0	0 / 0
Správa nemovitostí Kirchdorfer CZ s	CZ25259202	225 / 8880	57 / 2240	0 / 0	0 / 0	0 / 0
Správa silnic Olomouckého kraje,	CZ70960399	0 / 0	184 / 7264	0 / 0	0 / 0	0 / 0
Správa železnic, státní organizace	CZ70994234	956 / 37720	404 / 15917	0 / 0	0 / 0	145 / 5716
SPRL ICYNENE EUROPE	BE0502395761	0 / 0	13 / 528	51 / 2002	0 / 0	0 / 0
STACHEMA Bratislava a.s.	SK2020224547	11 / 443	0 / 0	0 / 0	23 / 920	6 / 224
STACHEMA CZ s.r.o.	CZ699000797	26 / 1041	0 / 0	0 / 0	0 / 0	0 / 0
STAPPA mix Brno, spol. s r.o.	CZ02410907	0 / 0	0 / 0	42 / 1657	0 / 0	0 / 0
STAREZ – SPORT, a.s.	CZ26932211	90 / 3550	0 / 0	0 / 0	0 / 0	0 / 0
START Zelený s.r.o.	CZ08731314	0 / 0	0 / 0	35 / 1386	0 / 0	0 / 0
Státní fond dopravní infrastruktury	CZ70856508	133 / 5227	249 / 9822	209 / 8225	50 / 1953	99 / 3905
Státní plavební správa	CZ00003352	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0

Státní ústav radiační	CZ86652052	0 / 0	0 / 0	161 / 6363	0 / 0	0 / 0
Státní zemědělská	CZ75014149	16 / 631	0 / 0	0 / 0	0 / 0	0 / 0
Statutární město Brno	CZ44992785	20 / 772	588 / 23195	89 / 3499	0 / 0	13 / 494
Stavební firma Vymětal s.r.o.	CZ25385615	18 / 698	15 / 580	0 / 0	0 / 0	0 / 0
Stavebniny DEK a.s.	CZ6990007979	18 / 693	0 / 0	0 / 0	0 / 0	0 / 0
STAVEXIS, s.r.o.	CZ46347194	58 / 2288	14 / 552	13 / 513	68 / 2681	17 / 671
Stavatelství Pospíšil s.r.o.	CZ25844610	0 / 0	2 / 80	0 / 0	0 / 0	0 / 0
STP Group, s.r.o.	CZ07980191	0 / 0	0 / 0	0 / 0	10 / 394	0 / 0
STRABAG s. r. o.	SK2020316298	0 / 0	0 / 0	63 / 2470	0 / 0	0 / 0
STRABAG, a.s.	CZ60838744	50 / 1957	0 / 0	0 / 0	0 / 0	0 / 0
Stráský, Hustý a partneři s.r.o.	CZ18827527	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Stráský, Hustý a partneři s.r.o.	SK4020208302	0 / 0	0 / 0	165 / 6509	0 / 0	0 / 0
SUBTECH, s.r.o.	CZ29352819	62 / 2446	310 / 12229	127 / 5010	83 / 3274	0 / 0
SUPER-KRETE CZECH s.r.o.	CZ25692810	44 / 1736	0 / 0	0 / 0	0 / 0	0 / 0
Svoboda a syn, s.r.o.	CZ25548531	0 / 0	0 / 0	0 / 0	0 / 0	50 / 1977
Swisspearl Česká republika a.s.	CZ18600247	0 / 0	0 / 0	13 / 495	9 / 355	0 / 0
SYNPO, akciová společnost	CZ46504711	55 / 2151	0 / 0	54 / 2112	59 / 2319	0 / 0
TAKENAKA EUROPE GmbH	CZ64355535	0 / 0	0 / 0	0 / 0	0 / 0	44 / 1736
TBG BETONMIX a.s.	CZ48530794	0 / 0	3 / 99	0 / 0	0 / 0	22 / 865
Technická univerzita v Liberci	CZ46747885	50 / 1972	0 / 0	0 / 0	0 / 0	0 / 0
Technické sítě Brno,	CZ25512285	12 / 469	0 / 0	0 / 0	0 / 0	0 / 0
Technický a skúšobný ústav stavebný	SK2021691881	0 / 0	15 / 600	7 / 292	0 / 0	0 / 0
Technický a zkušební ústav	CZ00015679	0 / 0	0 / 0	0 / 0	26 / 1026	0 / 0
Technische Universität Wien	ATU37675002	180 / 7104	0 / 0	0 / 0	0 / 0	0 / 0
Teplárny Brno, a.s.	CZ46347534	0 / 0	0 / 0	0 / 0	0 / 0	182 / 7179
TERMS CZ s.r.o.	CZ26022231	390 / 15385	0 / 0	0 / 0	0 / 0	0 / 0
THE UNIVERSITY OF BIRMINGHAM	GB729856187	0 / 0	0 / 0	1319 / 52034	0 / 0	2486 / 98060
THERMOSERVIS – TRANSPORT s.r.o.	CZ26912643	0 / 0	33 / 1315	14 / 545	0 / 0	0 / 0

TIBA BETON CZ, s.r.o.	CZ08379793	0 / 0	228 / 8995	17 / 690	151 / 5939	416 / 16406
TOMA Olomouc, s.r.o.	CZ01810740	0 / 0	20 / 789	0 / 0	0 / 0	0 / 0
TONDACH Česká republika s. r. o.	CZ25828584	16 / 631	0 / 0	0 / 0	0 / 0	0 / 0
TopTeramo s.r.o	CZ27789969	19 / 751	0 / 0	0 / 0	419 / 16529	0 / 0
TPA ČR, s.r.o.	CZ25122835	0 / 0	0 / 0	9 / 339	0 / 0	0 / 0
TRACK TEC SPÓŁKA AKCYJNA	PL8440012744	50 / 1956	0 / 0	0 / 0	0 / 0	0 / 0
TRANSBETON s.r.o.	CZ25597205	1041 / 41079	1102 / 43467	1113 / 43913	1235 / 48703	1271 / 50131
Trikaya Project Management a.s.	CZ05186234	0 / 0	0 / 0	0 / 0	95 / 3748	0 / 0
TVAR COM, spol. s r.o.	CZ13693671	6 / 217	100 / 3945	50 / 1966	0 / 0	0 / 0
TVARBET MORAVIA, a.s.	CZ13690558	0 / 0	0 / 0	0 / 0	20 / 789	0 / 0
U.S.Steel Košice, s.r.o.	SK36199222	0 / 0	789 / 31105	0 / 0	0 / 0	0 / 0
ÚJV Řež, a. s.	CZ46356088	120 / 4734	0 / 0	0 / 0	0 / 0	0 / 0
UNISTAV CONSTRUCTION a.s.	CZ03902447	0 / 0	9 / 355	0 / 0	0 / 0	0 / 0
Universität für Bodenkultur Wien	ATU16285008	55 / 2166	0 / 0	0 / 0	0 / 0	0 / 0
Univerzita Karlova	CZ00216208	0 / 0	11 / 444	0 / 0	0 / 0	0 / 0
Úřad pro technickou normalizaci,	CZ48135267	320 / 12617	240 / 9454	0 / 0	221 / 8737	579 / 22821
Ústav aplikované mechaniky	CZ60715871	0 / 0	0 / 0	0 / 0	0 / 0	25 / 986
Ústav súdneho inžinierstva	SK2023647813	0 / 0	0 / 0	37 / 1447	0 / 0	0 / 0
Ústav výzkumu globální změny AV ČR,	CZ86652079	0 / 0	100 / 3943	0 / 0	0 / 0	0 / 0
Veterinární univerzita Brno	CZ62157124	0 / 0	0 / 0	0 / 0	21 / 848	0 / 0
VH atelier, spol.s r.o.	CZ49437267	390 / 15385	0 / 0	490 / 19329	0 / 0	0 / 0
VIENNA POINT a.s.	CZ26229269	40 / 1578	0 / 0	0 / 0	0 / 0	0 / 0
VODA CZ s.r.o.	CZ25969692	0 / 0	780 / 30769	390 / 15385	0 / 0	0 / 0
Vodárenská akciová společnost, a.s.	CZ49455842	597 / 23536	99 / 3918	1765 / 69625	90 / 3535	0 / 0
Vodovody a kanalizace	CZ60108631	791 / 31215	149 / 5893	65 / 2564	0 / 0	0 / 0
Vodovody a kanalizace Kroměříž, a.s	CZ49451871	927 / 36568	640 / 25247	0 / 0	0 / 0	0 / 0

Vodovody a kanalizace Přerov, a.s.	CZ47674521	58 / 2288	0 / 0	0 / 0	0 / 0	0 / 0
Vodovody a kanalizace Vyškov, a.s.	CZ49454587	58 / 2288	0 / 0	0 / 0	0 / 0	0 / 0
VTP Brno, a.s.	CZ63483122	0 / 0	0 / 0	5 / 178	0 / 0	0 / 0
Vysoká škola báňská	CZ61989100	0 / 0	0 / 0	10 / 391	30 / 1183	205 / 8087
Výzkumný ústav pozemních staveb	CZ25052063	0 / 0	46 / 1807	0 / 0	190 / 7495	62 / 2454
Výzkumný ústav stavebních hmot, a.s.	CZ26232511	205 / 8087	0 / 0	0 / 0	18 / 710	50 / 1964
Výzkumný ústav vodohospodářský	CZ00020711	83 / 3260	0 / 0	0 / 0	0 / 0	0 / 0
Weir Minerals Czech & Slovak, s.r.o.	CZ02006316	0 / 0	0 / 0	0 / 0	23 / 892	0 / 0
Wienerberger s.r.o.	CZ00015253	15 / 592	84 / 3314	0 / 0	12 / 473	112 / 4414
Wienerberger-Slovenské tehelne	SK2020411954	0 / 0	0 / 0	20 / 769	0 / 0	0 / 0
Winning PS – stavební firma s.r.o.	CZ49436589	0 / 0	0 / 0	7 / 268	0 / 0	0 / 0
Winning PS s.r.o.	CZ07700245	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
WOMBAT, s. r. o.	CZ47912553	1287 / 50769	97 / 3811	694 / 27393	340 / 13400	414 / 16318
Würth, spol. s r.o.	CZ48036021	11 / 434	0 / 0	0 / 0	0 / 0	0 / 0
X_JR servis, s.r.o.	CZ26249022	35 / 1367	0 / 0	0 / 0	0 / 0	0 / 0
X_KELLER-speciální zakládání	CZ49702190	0 / 0	82 / 3235	0 / 0	0 / 0	0 / 0
X_Ředitelství silnic a dálnic ČR	CZ65993390	0 / 0	0 / 0	228 / 8978	80 / 3156	0 / 0
X_Slovenská technická univerzita	SK2020845255	0 / 0	39 / 1527	0 / 0	140 / 5523	0 / 0
Zábojník s. r. o.	CZ25542486	1 / 58	3 / 116	3 / 104	19 / 766	0 / 0
ZAKLAD CERAMIKI BUDOWLANEJ OWCZARY	PL7680007682	21 / 833	126 / 4952	21 / 821	0 / 0	113 / 4477
ZAPA beton a.s.	CZ25137026	0 / 0	74 / 2927	37 / 1462	97 / 3835	48 / 1880
ZAPA beton SK s.r.o.	SK2020283573	31 / 1206	0 / 0	0 / 0	0 / 0	0 / 0
ZEMSKÝ Rohatec, s.r.o.	CZ25729331	0 / 0	0 / 0	496 / 19566	0 / 0	0 / 0
ZEPIKO spol. s r.o.	CZ699006404	46 / 1830	49 / 1933	209 / 8262	137 / 5416	69 / 2709
ZNALCI A ODHADCI – znalecký ústav	CZ25577298	0 / 0	0 / 0	0 / 0	4 / 170	0 / 0
Zoo Brno a stanice zájmových činnos	CZ00101451	0 / 0	35 / 1381	0 / 0	0 / 0	45 / 1771

ŽPSV s.r.o.	CZ06298362	108 / 4241	196 / 7732	65 / 2549	915 / 36105	869 / 34283
Total		29847 / 1177414	26131 / 1030825	24558 / 968760	21969 / 866636	27116 / 1069668

Note: List and describe contract research activities with a revenue in a given calendar year, regardless of the amount of financial revenue.

3.4 Research results with existing or prospective impact on society

The evaluated unit shall briefly comment on a maximum of 10 (considered most significant by the evaluated unit) research results already applied or realistically heading towards application during the period of 2019–2023, based on the overview annex table 3.4.1 (it is recommended to indicate results with a link to projects listed in indicator 3.3). The evaluated unit must demonstrate in its description that the research results have led or will soon lead to positive impacts²⁹, on society (e.g. description of how the results are used by various users, the range of persons/institutions for which the result is relevant, measurable economic impacts, etc.). The evaluated entity shall indicate in its commentary whether the gender dimension is considered in these results and discuss the impacts of the results regarding sustainability.

Maximum range 300 words/result.

Self-assessment:

Contact System to Suppress Thermal Bridges in Buildings (Patent)

The contact system for reducing thermal bridges in buildings (Patent no. 308263, 2018) represents an innovative technology that significantly contributes to improving the indoor environment in buildings. The system consists of a layer of material with thermal conductivity of at least $5 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$, attached to the substrate with a vapor-impermeable adhesive. This layer covers areas with increased heat flow and eliminates thermal bridges, with tested applications confirming its high efficiency.

The patent has been applied, for example, in the main building of the Johan Gregor Mendel Polar Station in Antarctica, where it demonstrated its ability to withstand extreme conditions. Practical applications also include several buildings in Brno, where it has been tested as a functional sample and prototype. According to the investigation by the European Patent Office, no direct matches were found, confirming its originality and significance at the international level.

The system eliminates the effects of thermal bridges, such as damp corners and mold, which have a fundamental impact on the quality of the indoor environment and the health of users. Unlike conventional facade insulation, which is not always feasible (for example, in historical buildings), this system allows critical areas in the interior to be treated at significantly lower costs. As a result, it is also accessible to owners with limited financial resources.

In 2024, the technology was commercialized through the sale of a license, confirming its economic benefits. The system has the potential for wide application in construction, addressing not only technical but also social and health challenges. Furthermore, it is fully aligned with sustainability principles, as it reduces energy losses without the need for major construction modifications. The gender dimension is indirectly addressed, as it contributes to improving the health and comfort of all building users without discrimination.

Self-Compacting Soil-Based Grout (Patent)

The self-compacting soil-based grout (Patent no. 308679, 2020) represents an innovative material designed for geotechnical constructions, especially for backfilling engineering network (EN) trenches. This invention addresses the problem of efficiently utilizing excavated soil by transforming it into a self-compacting mixture with plasticizing and liquefying additives, enabling easy backfilling of trenches without the need for mechanical compaction.

Common methods for ensuring the stability of excavations rely on the gradual compaction of soil in layers, which is time- and cost-intensive. The self-compacting grout offers a revolutionary alternative that eliminates the need for compaction and vibrations. Thanks to its ability to uniformly fill spaces,

²⁹ See Terms definition.

including hard-to-reach areas, it significantly increases the efficiency of construction works and reduces the risk of uneven settlement of the subsoil.

The mixture composition includes soil, cement, calcium hydroxide, plasticizing or liquefying additives, water, and optionally fluid fly ash and superabsorbent polymers. This combination of components ensures optimal strength, minimal shrinkage, and excellent spreading. The mixture hardens within hours, achieving the required stability.

The technology has broad application potential. It enables the recycling of almost any type of excavated soil, contributing to the sustainability of construction processes and minimizing waste. Furthermore, its use is economically advantageous, as it reduces costs related to the transportation and disposal of excavation material.

From a societal impact perspective, the technology improves work efficiency and reduces environmental impact. The gender dimension is not directly specified, but the outcomes have a general positive effect on all users and workers involved in construction projects. The self-compacting grout is a pioneering innovation on the Czech market with the potential to become a standard in modern construction.

Pressure Sewer System and Method Therefor (Patent)

The European patent no. [EP3263786B1](#) represents an innovative technology focused on optimizing the operation of pressure sewer networks, particularly through the control of individual pump operations. The patent offers a practical and commercially applicable solution that significantly contributes to preventing pipe blockages and improving the efficiency of sewer systems.

This technology was licensed in 2021 to PRESSKAN system, a.s., the largest Czech manufacturer and supplier of pressure sewer systems. The industrial rights for its use were sold for 2,5 million CZK (approximately 100 000 EUR excluding VAT). The patent has been validated in 10 European countries, including Slovakia, Poland, Austria, Germany, Denmark, Bulgaria, Serbia, Croatia, Romania, and Hungary, which emphasizes its international significance and application potential.

The university continues to collaborate with PRESSKAN system, a.s., on integrating this technology into serial production and construction practice. To support this process, two contractual research projects were carried out in 2021 and 2022. A new research project titled “Implementation of Advanced Pressure Sewer Operation Control Technology into Production and Practice” (CZ.01.01.01/01/22_002/0000570) with a budget of 9,35 million CZK (374 000 EUR) will be launched in September 2024. This project aims to advance the technology to the stage of regular operation and maximize its benefits.

From a societal impact perspective, the technology ensures more reliable operation of pressure sewer networks, reduces operational costs, and minimizes the risk of failures, which positively affects the environment and the quality of life for residents. The gender dimension is not specified, but the outcomes contribute to general sustainability and better hygienic conditions in communities where the technology is implemented.

Method for Safely Flushing Water Network Pipes and Mobile Device for Safely Flushing Water Network Pipes (Patent)

National patent represents a revolutionary technology known under the trademark Technologie Astacus®. This innovation introduces automation and robotics into the management of water supply networks, fundamentally changing the existing approaches to their maintenance at both national and international levels.

The technology enables safe and efficient cleaning of pipes using a robot that can independently perform complex tasks without the need for manual intervention. This system provides a high level of

reliability and accuracy, reducing the risk of water contamination and ensuring higher hygiene standards in drinking water supplies.

The patent has been exclusively licensed to VODA BRNO, s.r.o., a spin-off company of the Brno University of Technology. This company is responsible for the production and distribution of Astacus robots and also operates the server infrastructure that provides computational support for the robots deployed in the field. The technology is already commercially utilized, with the first six robots in operation at major water utility companies such as VODÁRENSKÁ AKCIOVÁ SPOLEČNOST, a.s., ČEVAK, a.s., and VaK Jesenicka. These companies supply drinking water to over one million residents of the Czech Republic.

This invention has a significant societal impact as it contributes to the sustainability and efficiency of water supply network management. It minimizes operational costs, increases workplace safety, and helps protect the environment by eliminating the need for chemical cleaning agents. The technology also fosters innovation and employment in the fields of robotics and water resource management. While the gender dimension is not specifically mentioned, the technology improves the quality of life for all drinking water users, making it a key tool in modern infrastructure.

System for Monitoring the Leak of Wastewater from a Double-Skin Sewer in Real Time (Patent)

The national patent (Patent no. 309382, 2021) represents a technology that innovatively addresses the monitoring and detection of wastewater leaks from double-walled sewer systems. This system allows real-time identification of leaks or faults in sewer networks, ensuring a quick response to rising issues and minimizing negative environmental impacts.

A typical application of this technology is the drainage of industrial areas, especially those with chemical manufacturing, where potential leaks of contaminated wastewater can cause significant damage to underground or surface waters. The patented system detects problems immediately after their occurrence and allows network operators to take necessary corrective actions. This proactive approach eliminates the risk of long-term environmental damage and reduces financial costs associated with addressing ecological disasters.

The patent is licensed to SATTURN HOLEŠOV spol. s.r.o. and the Brno University of Technology, who equally share its commercialization. This collaboration ensures not only further development and production of the system but also its practical implementation. The technology is fully in line with sustainable principles, as it directly contributes to the protection of water resources and the minimization of the ecological impacts of industrial activities.

From a societal impact perspective, the invention not only improves the efficiency of sewer network management but also strengthens the prevention of ecological disasters, which has a long-term positive effect on environmental quality and public health. The gender dimension is not explicitly mentioned, but the technology provides universal benefits to all residents and entities connected to the sewer systems.

Analysis of the Marketing Potential and Technical Parameters of the New Czech Port Area in Hamburg (Significant Analysis)

The result of the project in section 3.3 is the document “Analysis of the Marketing Potential and Technical Parameters of the New Czech Port Area in Hamburg”, which provides comprehensive data for the decision-making process regarding the establishment of a new port area at the Kuhwerder Hafen site in Hamburg. This document takes into account the economic potential and technical parameters of the port area and assesses the advantages of exchanging the existing Czech plot for the newly offered land that would allow the development of a modern seaport. This port holds strategic importance for the Czech state as it guarantees the country’s only access to the sea based on an international agreement.

The resulting methodology developed within the project includes a financial and economic analysis that considers the direct costs for the infrastructure manager (ŘVC), the residual value of the assets built by the Czech Republic at the port, and significant socio-economic impacts. Key impacts include savings on container transportation on the Hamburg–Riesa and Hamburg–Ústí nad Labem routes, reduced costs for carriers when transporting oversized cargo, and an improvement in the competitiveness of key sectors of the national economy. The document thus provides clear and substantiated arguments to support this initiative.

Due to the unique methodology and the broad scope of the analysis, this result has a real impact on the development of Czech infrastructure and strengthens the connection of the Czech Republic with international markets. The collaboration between the Institute of Civil Engineering Economics and Management at the Brno University of Technology, the AdMaS center, the German company Wagener&Herbst Management Consultants GmbH, and Sweco Hydroprojekt ensured a high level of expertise and practical relevance of the results.

This outcome highlights the strategic significance for the Czech state not only in the context of infrastructure but also in long-term economic development and effective management of water transport.

Guidelines, FIB bulletin, 2023, Participation in The International Federation for Structural Concrete (fib) (Significant Analysis)

The involvement of the faculty in two working groups (TG) of the International Federation for Structural Concrete (fib) has made a significant contribution to the development of international standards and technical regulations in the design and maintenance of concrete structures. The first group is TG2.8: Safety and Performance Concepts, which falls under fib COM2: Analysis & Design, and the second group is TG3.3: Existing Concrete Structures: Life Management, Testing and Structural Health Monitoring, which falls under fib COM3: Existing Concrete Structures. The fib brings together leading global experts, with its main goal to transfer the results of research and innovation into practice to create safe, durable, and sustainable infrastructure.

Professors Novák and Lehký contributed directly to the creation of significant technical publications, specifically [Bulletin No. 86: Reliability Assessment of Concrete Structures](#) and Bulletin No. 109: [Existing Concrete Structures – Life Management, Testing and Structural Health Monitoring](#). These documents serve as key sources of information for engineers, academics, and professional public, ensuring the wide implementation of current research findings into practice.

The involvement of FCE professors in fib has led to significant international collaboration, enabling the sharing of knowledge and experiences with global experts. This brings a direct impact on Czech research, its international prestige, and the implementation of the latest trends in Czech construction practice. Their activities support strategies for environmentally friendly and sustainable construction, ensuring long-term benefits for society and the industry. In this way, the results of their work contribute to the modernization and sustainability of the construction industry both globally and locally.

ČSN 73 6141 Requirements for the Use of Materials in Asphalt Mixtures (Technical State Standard)

Recycling of asphalt pavements represents a key step toward sustainability in transportation infrastructure and environmental protection. The ČSN 73 6141 standard provides a comprehensive framework for the acquisition, processing, and use of recycled materials (R-materials), ensuring their high-quality and safe incorporation into new asphalt mixtures. This process includes not only technical quality requirements but also environmental considerations, such as waste minimization and the reduction of harmful emissions. R-material is generated through the recycling of asphalt layers from roadways or as a by-product of non-conforming production and contains asphalt binders that can be rejuvenated and effectively reused. The use of this material contributes to reducing the need for new

raw materials, which is essential for sustainability. Moreover, proper processing and quality control according to the standard ensure that the resulting asphalt mixtures meet the same parameters as mixtures without recycled content. The technological procedures for acquiring R-material include selective milling and separate storage, which minimizes contamination risks and improves material homogeneity. The processing steps, such as crushing and sorting, allow for the effective removal of unsuitable particles and prepare the material for reuse. A significant benefit is the possibility of rejuvenating aged asphalt binder, which helps maintain or even improve its properties. The use of rejuvenating additives or softer asphalts ensures that the resulting mixtures meet stringent standards and provide long-term durability. This process offers significant economic and ecological benefits as it reduces the need for new raw materials and the energy demand. Therefore, asphalt pavement recycling represents an important element of the circular economy in transportation infrastructure. In a broader context, it contributes to the protection of natural resources, reduces greenhouse gas emissions, and supports sustainable development. This approach reflects the global effort for responsible resource management and enhances the quality of life not only by reducing environmental impacts but also by promoting modern technologies and efficient material use. Asphalt pavement recycling is thus not only a technical solution but also an example of a systemic approach to global challenges that integrates environmental, economic, and social aspects.

Recommendation of RILEM TC 264 RAP on the Evaluation of Asphalt Recycling Agents for Hot Mix Asphalt (Significant Publication)

The recommendation titled “Recommendation of RILEM TC 264 RAP on the evaluation of asphalt recycling agents for hot mix asphalt” (DOI: 10.1617/s11527-021-01837-0), published in the prestigious journal *Materials and Structures* (Q1; Electronic ISSN: 1871-6873; Print ISSN: 1359-5997), has a significant impact on the field of asphalt pavement construction. This recommendation serves as a manual for the application of recycling agents in the production of asphalt mixtures across Europe. Its influence has been felt not only in academic circles but also in practical applications, quickly becoming a highly cited document (CNCI: 4.6599).

The importance of this recommendation lies in enabling the effective use of large amounts of recycled materials (R-materials) in new asphalt mixtures. The annual European production of asphalt mixtures reaches approximately 279.4 million tons, which places significant demands on aggregates and asphalt. This recommendation addresses a critical technical issue related to the aging of the asphalt binder contained in R-materials, which loses its original properties due to UV radiation and climatic conditions. The document describes the rejuvenation processes of these materials, allowing their reuse at a level comparable to new binders.

With this methodology, it is not only possible to preserve natural resources, such as aggregates and asphalt, but also to achieve substantial economic and ecological savings. The recommendation has far-reaching societal significance, as it supports sustainability and innovation in the field of transportation infrastructure. The document is freely accessible through the International Union of Laboratories and Experts in Construction Materials, Systems and Structures – RILEM.

Roller shadings that allows to use ultra-wide blind widths in connection with thin winding tube

A longstanding challenge in the field of shading technology—how to prevent large-format roller blinds from sagging—has been successfully solved by the Czech company BEMATECH in collaboration with Professor Miroslav Vořechovský from the Institute of Structural Mechanics at Brno University of Technology. Their innovative ZOOMTECH system uses a unique combination of a rotating tube and a precisely curved internal reinforcement rod with bearings, which straightens under pressure to keep the blind perfectly flat. This groundbreaking solution earned them the top award at the R+T 2024 international trade fair in Stuttgart. The collaboration began in an unexpected way—through a casual

conversation in a choir—and evolved into a complex technical partnership involving mechanical optimization, materials science, and machine design.

While the initial challenge was to eliminate sagging, the project led to further innovations. Prof. Vořechovský designed a special machine to produce the curved reinforcements in a single pass, and BEMATECH now also supplies these machines worldwide. The team continues to innovate, working on segmented blind systems to ease transport and installation. Additionally, they are exploring a joint project with a Swiss company to integrate both technologies: ZOOMTECH's sag-free blinds with a novel side-guiding solution that avoids the bulkiness of traditional zippers. This could result in elegant, large-scale blinds with flawless tension and side control—ideal for architectural, industrial, or exhibition uses.

Table 3.4.1 - Overview of research results in the period under evaluation

Type of result ³⁰	Year of application	Name
Patent	2020	Contact System to Suppress Thermal Bridges in Buildings
Important study	2019	Analysis of the marketing potential and technical parameters of the new port area of the Czech Republic in Hamburg
Patent	2020	Self-Compacting Soil-Based Grout
Analysis	2022	Recommendation of RILEM TC 264 RAP on the evaluation of asphalt recycling agents for hot mix asphalt
Technical State Standard	2021	ČSN 73 6141 ČSN 73 6141 Requirements for the use of materials in asphalt mixtures
Methodology	2023	Participation in The International Federation for Structural Concrete (fib) - Prof. Lehký and Prof. Novák are members of TG 2.8 "Safety and Performance Concepts" and TG 3.3 "Assessment/Evaluation and Decision-Making Procedures for Life Cycle Management of Existing Concrete Structures".
Patent	2021	Pressure Sewer System and Method Therefor
Patent	2022	Method for Safely Flushing of Water Network Pipes and Mobile Device for Safely Flushing of Water Network Pipes
Patent	2022	System for Monitoring the Leak of Wastewater from a Double-Skin Sewer in Real Time
International award	2024	Roller shadings that allows to use ultra-wide blind widths in connection with thin winding tube

Note 1: Please list and describe the results already applied in practice or heading towards application in practice with existing or prospective impact on the society (e.g. domestic or foreign patents, sold licenses, spin-offs, prototypes, varieties and breeds, methodologies, significant analyses, surveys, expert outputs for policymaking or other forms of non-publication outputs, etc.). Indirect results of research, development and creative activities with documented societal impact, e.g. expert activities, services to the public/government/scientific community, may also be reported.

³⁰ Specify the specific type of result. Add rows as needed.

TRANSFER OF RESULTS INTO PRACTICE

3.5 Transfer of results into practice

The evaluated unit shall briefly describe its system for transferring results into practice. It shall also indicate up to five of the most typical users of its results, whether in the university environment or in the non-university application/corporate sphere, detailing how it collaborates with them and how it seeks out new users (using a maximum of five specific examples).

It will also indicate whether and how it commercialises R&D&I results (e.g. selling licences, setting up start-up or spin-off companies, etc.)³¹, providing brief description of the commercialisation methods used. The effectiveness of the transfer of results and the commercialisation of R&D&I results will be described using a selection of results (max. five) listed in annex table (Table 3.4.1).³²

Additionally, the evaluated unit shall briefly comment on the funds received during the period of 2019–2023 from non-public, non-grant sources (e.g. licences sold, spin-off revenues, donations, etc.). A full summary shall be provided in annex table (Table 3.5.1).

Maximum 500 words plus 200 words for each provided example of finding a new user of results and commercialization.

Self-assessment:

The Faculty of Civil Engineering of the BUT effectively transfers its results into practice through a combination of a central university system and the Faculty's own mechanisms.

On the level of the whole BUT, the transfer is secured via the **Department of Project Support and Knowledge Transfer** which connects the academic and application spheres, i.e., scientists and companies. The department provides support in the field of intellectual property protection and helps researchers transfer their inventions into practice. On the university level, the knowledge transfer is covered by two guidelines: **the Guideline no. 10/2023**, which deals with the evidence, protection and rules for the commercialization of industrial rights at BUT. It establishes procedures for the protection of intellectual property and its subsequent use in practice; and **the Guideline no. 8/2022**, which regulates the establishment of spin-off and start-up companies at the BUT, thus supporting the commercialization of research and development results.

On the Faculty level, the **Research and Development Office** focuses on project support, research support, managing the evaluation of results according to the Methodology 17+, and knowledge and technology transfer. This department provides methodological, legal and business support to researchers in the commercialization of their results. **The Dean's Guideline no. 22/2024** specifies procedures for the evidence, protection and exploitation of intellectual property created at the FCE. It expands the rules set out in the university guidelines and adapts them to the specifics of the Faculty. These guidelines create a framework for effective knowledge and technology transfer from academia to practice, fostering innovation and cooperation with industrial partners. Due to this structure combining the central support with the Faculty initiatives, the Faculty achieves effective transfer of research results into practice, which has a positive impact on industry and the public sector.

Among the key users of the results of the Faculty of Civil Engineering belong:

1. **Building Companies** – e. g. S.O.K. stavební, s.r.o. (using utility model no. 34855), Voestalpine Profilform s.r.o. (using utility model no. 35134).

³¹ In the case of military HEIs, their specific position is taken into account when evaluating the commercialisation/evaluation of R&D&I results.

³² If the commercialisation of R&D&I results is carried out in this way.

2. **Manufacturers of building materials** – e. g. PORFIX CZ a.s. (utility model no. 35605), Lias Vintířov, lehký stavební materiál k.s. (utility models no. 35187 and 35405).
3. **Water Management Companies** – e. g. PressKan systém, a.s. (license for Czech patent no. 306 856 and European patent EP 3 263 786 B1), spin-off company Voda Brno, s.r.o.
4. **Engineering and project offices** – e. g. GEOSTAR, spol. s r.o. (utility model no. 28937), SEDUM TOP SOLUTIONS s.r.o. (utility model no. 34638)
5. **Companies using licensed technologies** – e. g. BETOSAN s.r.o. (license agreement no. 35464), Froněk, spol. s r.o. (utility model no. 33922).

The faculty seeks new partners the following ways:

1. **Presentations on fair trades and conferences** – The Faculty regularly participates in key civil engineering and technological fair trades, such as [FOR ARCH](#), [Festival architektury](#) (Festival of Architecture), or [AMPER Trade Fair](#). During these events the Faculty presents its innovations, technological novelties and results of current research that might be relevant for a broad specter of industrial partners. During these meetings, direct discussions on cooperation opportunities, licensing of results and establishing new contacts with potential partners take place.
2. **Cooperation on applied research within project calls** – The Faculty actively seeks new application partners through project calls of the Technology Agency of the Czech Republic and other national or international programs supporting applied research. When preparing project applications, we approach companies that may be interested in specific technological solutions that can be developed and improved as part of the project outcomes. This leads not only to cooperation on specific research projects, but also to long-term partnerships in the field of innovation.
3. **Licensing offers through technology transfer** – The Faculty systematically works on identification of results with commercialization potential and their offer for relevant subjects. The Faculty created a catalogue of results offered for commercialization to the application sphere. For this, the Faculty uses a direct communication with companies, professional publications, as well as its own digital platforms and databases of technological innovations to promote licensable results. This approach provides efficient connection of academic research with the industrial practice.
4. **Professional workshops and trainings** – The Faculty regularly organizes professional workshops, trainings and seminars focused on technology transfer and application of research results into practice. These events are organized for representatives of industrial enterprises as well as for public administration. At these meetings, innovative procedures, new materials or technological processes are presented, which can be directly implemented by companies in their production or construction processes.
5. **Direct contact with industrial partners** – The Faculty continuously analyses market trends and the needs of the application sphere. Based on that, it addresses new potential partners with an offer of cooperation. This approach enables the Faculty to make a contact with companies searching for specific solutions improving their technological processes, efficiency and sustainability. Because of this, the faculty actively contributes to the innovations in civil engineering and related disciplines.

The Faculty of Civil Engineering commercializes the results through the following ways:

- **License sales** – The Faculty systematically works on offering licensing of innovative technologies and materials. E.g., the license for patent no. 308 263 was offered to the associate professor Miloš Kalousek, which enabled practical application of the designed solution in industrial practice.
- **Establishment of spin-off companies** – The Faculty continuously supports the establishment of new companies focused on the commercialization of results of research and development.

Among the successful results belongs the company Conwe s.r.o., specializing on a natural wastewater treatment; Voda Brno s.r.o., dealing with systems for monitoring the quality of drinking water; Forenzio etc.

- **Contract research and cooperation with companies** – The Faculty develops its cooperation with the private sector through contract research, e. g. contract for the transfer of rights of a technology with the Lias Vintřov and SATTURN HOLEŠOV companies, contributing to the development of innovations in the industry.

The efficiency of technology transfer can be illustrated by following examples:

1. **Facade with controlled ventilation gap (utility model no. 38203)** – improving energy efficiency of buildings, potential for licensing to construction companies.
2. **Advanced composite for basalt element repair (utility model no. 34524)** – industrial use for the restoration of historic buildings.
3. **Substrate for green walls and facades (utility model no. 37885)** – use in a field of ecological buildings.
4. **Polymer and epoxy remediation systems (utility models no. 37514, 37518, 37519)** – use in water management infrastructures.
5. **Equipment for diagnosing the condition of railway switches (utility model no. 37850)** – applications in the transport sector.

Funds received from non-public, non-grant sources (2019–2023)

In 2019–2023, the Faculty gained approximately 50 million CZK from non-public non-grant sources, especially from license sales, contract research and revenues from spin-off companies. Such model enables not only efficient transfer of results into practice but also financial stability as well as further development of scientific capacities of the faculty. A detailed overview is presented below (table 3.5.1).

Table 3.5.1 - Summary of non-public revenues received during the period under evaluation

Type of revenue	Revenue (in thousands CZK/EUR)				
	2019	2020	2021	2022	2023
Licences sold	38 / 1 499	41 / 1 617	1 435 / 56 607	1 223 / 48 244	905 / 35 700
Spin-off companies	0 / 0	0 / 0	0 / 0	0 / 0	46 / 1 814
Expert opinions and assessments	1 421 / 56 054	5 894 / 232 503	7 228 / 304 850	6 672 / 263 194	8 967 / 38 145
Other	3 144 / 124 023	2 219 / 87 534	3 708 / 146 271	2 588 / 102 090	5 005 / 197 434
Total	4 603 / 181 577	8 154 / 335 858	12 371 / 488 008	10 483 / 413 531	14 923 / 588 678

Note: Enter funds raised for R&D&I from non-public sources besides grants or contract research (e.g. licences sold, spin-off company revenues, donations, etc.) in the calendar year.

POPULARIZATION OF VAVAI

3.6 The most important activities in the field of popularization of R&D&I and communication with the public

The evaluated unit shall briefly describe its main activities related to the popularisation of R&D&I and communication with the public (e.g. popularisation lectures, citizen science initiatives, etc.) during the period of 2019–2023 and provide up to 10 examples that it considers the most significant.

Maximum 500 words plus 200 words for each example given.

Self-assessment:

The results of research and development and information about events organized by the Faculty are regularly shared on FCE's website, in the [Pro média](#) section.

The faculty has founded its own [information channel on YouTube](#) where it shares interviews on current social-relevant topics related to professional orientation of the Faculty. Further, the Faculty informs of its activities and results of research and development in its social media, with a high number of followers ([Facebook](#) 7.6 thousand followers; [Instagram](#) 5.1 thousand followers and [LinkedIn](#) 2.1 thousand followers).

The Faculty regularly participates in the nationwide event Researcher's Night, which takes place every year at the end of September. Twice a year, it organizes an educational and entertaining event for children from kindergartens and the first grades of elementary schools called "Technical Kindergartens" and participates in the university-wide event for elementary school pupils called "BUT Junior". For secondary school students, an entertaining and educational competition called "FAST Factor" was organized in 2022 and 2023. With the exception of the pandemic period, the Faculty regularly organizes excursions for secondary school students.

During the pandemic, the Faculty's academic staff and students actively participated in organizing a large-scale vaccination center in Brno. They also communicated the issue of movement modeling of large numbers of people within buildings with the media. Similarly, the staff got involved in managing the refugee crisis after the war in Ukraine started, with students and staff serving continuously for several weeks at the refugee center at the Brno Exhibition Center. In 2023, a "Rescue Services and Firefighters Children's Day" was organized, where the children were introduced to fire protection issues in buildings in an entertaining way.

Academic staff of the faculty regularly give interviews to representatives of the press on current topics from the field of civil engineering – e. g. technical condition of bridges, technical condition of football stadium, use of 3D print during constructions, highway reconstruction, high-rise building construction, fires in buildings, quality of drinking water in water supply networks, new Czech port area in Hamburg, provision of expert opinions, demolition of the Kakhovka Reservoir, occurrence of mould in insulated houses, installation of PV panels on roofs, closing of the cinema "Scala" in Brno etc.

On 23th February 2020, professor Kudrna participated in the television program "Otázky Václava Moravce" focused on the construction of the road network. Professor Krmíček gave a number of interviews in connection with volcano research on Iceland. The employees or alumni of the faculty (Ing. Remeš, Ing. Machát, Ing. Okleštěk, Prof. Krmíček, Assoc. Prof. Apeltauer) appeared in the episodes of the BUT podcast "Technicky vzato".

The faculty has been a long-term expert guarantor of the knowledge competition organised by the Association of heating engineers and plumbers (Cech topenářů a instalatérů). A significant public response was made by the expert publication Brno Phenomenon Lesná by Ing. arch. Guzdek.

The faculty annually organizes a specialized competition for secondary school students called STAVOKS and offers topics within the framework of high school professional activities. Since 2022,

the faculty has become more actively involved in the government's development assistance program for selected countries, both by popularizing this program in student recruitment and by actively implementing projects in Bosnia and Herzegovina. As one of the outputs of the applied research project, a freely available publication „The use of LNG in transport and energy and its safety” was produced in 2019. Faculty start-up Plastic guys communicated regularly on the topic of circular economy and secondary use of waste plastics in the construction industry with the public. On the faculty's [YouTube channel](#), interviews on simulating the movement of people around a vaccination centre for the COVID 19 vaccine, the use of LNG in times of energy crisis, the production of military protective bunkers from 3D printing, and training guide dogs for the blind to move around buildings.

Researcher's Night

The faculty regularly participates in the national-wide event [Researcher's Night](#), when it continuously achieves the highest attendance of the entire BUT. With regards to annual high attendance, the faculty organizes more than 20 demonstration stations every year. In 2022, approximately 2.300 from total of 6.000 visitors of BUT visited the faculty, and in 2023, approximately 1.970 persons from total of 7.600 visitors of BUT visited the FCE.

Knowledge competitions

Educational competition [FAST Factor](#) was an entertaining competition aimed at high school students, which took place within the AdMaS Research Centre in 2022 and 2023. Over 300 students have participated in the competition every year. At each station, first an expert lecture was carried out and then individual teams competed in performing tasks - e. g. locating a place using GPS coordinates, filling a container with water for 1 CZK, recognizing building materials, understanding the need for barrier-free buildings by moving in a wheelchair through the building, etc.

[Knowledge Olympiad of the Guild of Heating Engineers and Plumbers](#) is a nationwide competition for students of technical secondary schools focused on building services. The faculty staff regularly serve as professional guarantors of the competition. The announcement of the competition results often takes place in the faculty's auditorium. Around 100 students participate in the regional rounds of this competition annually.

Technical kindergartens and excursions

[Technical kindergartens](#) are organized twice a year for one or two classes of selected kindergartens and elementary schools. In an [entertaining way](#), children are introduced to various building materials or have the [basic principles of fluid flow](#) explained to them in the water research laboratory.

[Excursions from secondary schools](#) take place at the faculty on a long-term and regular basis. Most of the schools that visit the faculty are construction schools, however, excursions for grammar schools are organized as well. For secondary schools, the faculty prepares an educational program focused on building materials or construction issues. Considering the fact that faculty representatives communicate regularly with secondary schools and secondary schools find these educational programs attractive, such excursions take place very frequently. Within the program, students complete assignments in applied physics or chemistry. In addition to the standardized teaching program, we also organize field trips or lectures on request according to the assignments of the teachers from the respective secondary schools. This can be, for example, an architectural walkthrough Brno, a BIM lesson, a lecture on land registry, the use of physics in bridge construction, drinking water and wastewater treatment, or modelling fluid flow.

Scholarships

The faculty supported **the government scholarship program** with a separate social media campaign in the target countries. These were Bosnia and Herzegovina, Georgia, Ethiopia, Cambodia, Moldova, Ukraine and Zambia. As a result, there were 560 applications for government scholarship to study at the Faculty of Civil Engineering recorded in the application register in 2023/24. As part of our collaboration with the [University of Banja Luka](#), we are working on blue-green infrastructure projects. One of the outputs of the development assistance project is the freely available publication [Circular economy in water management](#).

Publications and interviews with significant acclaim

The publication [Brno Phenomenon Lesná](#) presents a complex summary of the historical and architectural development of the settlement Lesná in all its contexts, from the design, through the typology of individual buildings to the problems the settlement had to face after the social changes in 1989. The publication was awarded [2nd place in the Best Czech Book of the Year 2021 competition](#) in the category of Scientific Literature. The competition is announced annually by the Memorial of National Literature in Prague.

The publication [LNG use in transport and energy and its safety](#) contains a summary of the basic technical parameters of LNG, information on its possible use and information on safe transport, storage and operation of filling stations. After the outbreak of war in Ukraine and the related energy crisis, the publication has become a clear source of information for journalists and the public on the topic of LNG.

Unique results in the field of research on the origin of **volcanoes in Iceland** were achieved by [Professor Krmíček](#), who subsequently gave a [number of media interviews](#) on the subject.

Help during crisis events

Academic staff of the faculty created a [model of the Vaccination Centre in Brno](#) during the COVID pandemic and at the same time provided consultations on the organization of operations in other vaccination sites in the [South Moravian Region](#) and centers across the country. Assoc. Prof. Apeltauer subsequently gave a number of [interviews](#) on this topic, where he explained the issue of modelling of the movement of people, shared on the internet, [radio](#) and [other media](#).

In March 2022, following the refugee crisis after the outbreak of the war in Ukraine, students and academics organized a team of volunteers to take continuous turns at the refugee center to assist refugees from Ukraine. Such rapid organization and intense student involvement [received positive media coverage](#).

Startups with a significant response

Originally students, then graduates of the faculty, Ing. arch. Venclík and Ing. arch. Marko Aulisa founded the [start-up Plastic Guys s.r.o.](#), which operates in the space of the AdMaS Research Centre of the faculty. This start-up deals with the processing of waste plastics, which are used to produce interior design decorations. With the support of the faculty, Plastic Guys communicates the topic of the circular economy and its potential in the construction industry to the public. Ing. arch. Venclík even became the main face of the faculty's recruitment campaign. The faculty was also at the beginning of the project when it supported the students in their [positively publicised pilot project of a shelter](#) made of plastic waste, which is still on the FAST campus today.

IMPLEMENTATION OF RECOMMENDATIONS

3.7 Implementation of the recommendations in Module 3

The evaluated unit will briefly describe how it has implemented the recommendations for Module 3 from the previous evaluation period, if applicable.

Maximum 1000 words.

Self-assessment:

The evaluation report of the International Evaluation Panel made the following recommendations in its previous evaluation:

Place more emphasis on international projects as there was only a limited number of them in the last evaluated period (Section 3.2).

In the evaluated period, the faculty has significantly expanded its administrative support for projects with an emphasis on European schemes. The project support team was strengthened by 3 persons who specifically focus on European grant schemes and knowledge transfer into practice. This support has led to some partial successes (see list of key projects). In this regards, Professor Vořechovský's project, which was successful in the [ERC Synergy Grants 2024](#), can be considered a real breakthrough success.

A multidisciplinary team of experts - Thomas Matschei (cement chemistry), Bernhard Pichler (multiscale material science), Miroslav Vořechovský (probabilistic computational mechanics), and Rostislav Chudoba (structural concrete) - is coming together to establish the missing link between the material science of eco-efficient concretes and the fatigue life of key transportation and energy infrastructure.

The goal of this new Synergy Grant project is to decode the microstructural origins of concrete fatigue and to predict its impact on the structural lifespan. By formulating new theoretical concepts and combining them with innovative computer simulations and experimental protocols, the research team will underpin guidelines for designing durable structures with extended service life using the next generation of eco-efficient concretes, promoting their adoption in the construction sector.

Continue efforts to increase contract research and non-public research funding in general (Recommendations 3.2, 3.3 and 3.4).

In the evaluated period, the faculty has fundamentally reformed the system of internal evaluation and funding of departments, the system of support for excellence of staff and the criteria for awarding the title of professor. The result is a system of interconnected internal standards that replicates the system of distribution of institutional support at the BUT and evaluates institutes and individuals also for the volume of contract research and research from non-public sources in general.

Internationalize internal patent policy (Recommendations 3.5 and 3.6).

The faculty has implemented a robust knowledge transfer guideline that focuses also on patents. The guideline elaborates the rules of procedure for the evidence, protection and use of intellectual property objects, especially the results of science, research and development, created at the faculty. International patent policy is also supported by another set of internal standards. International patents are newly supported by a system of internal evaluation and funding of departments. At the same time, there is an internal Fund of Excellence, which is generally used to support the authors of excellent results including international patents. The authors of the patents are directly rewarded. The system is rounded off by the criteria for the award of the title of professor, which take account of international patents.

Increase the attractiveness of setting up spin-off companies (Recommendations 3.7, 3.8 and 3.9).

In relation to the previous point (support of knowledge transfer at the faculty), several start-ups and spin-offs have been established. Examples include [Plastic Guys](#) and [Forensio](#).

[Plastic Guys](#) is a company founded by Ondřej Venclík and Marc Aulis, graduates of the Faculty of Civil Engineering of BUT, specialized in the production of building and interior boards made of recycled plastic. Their goal is to process plastic waste. They have been recycling plastics for a long time, their first project involved building forest shelters from recycled material. In 2020, they began experimenting with their own heated press and developed a unique slab decor that resembles marble and finds its use in both interiors and exteriors. In 2021, Plastic Guys won the BUT Student Entrepreneurship Award competition and used the consultancy of the South Moravian Innovation Centre. Their recycled boards can be found in various establishments in Brno such as Espresso Punkt Bar, Bistro Bastardo and Campani Gelato. The main mission of Plastic Guys is to raise awareness of meaningful plastic recycling and to offer sustainable and aesthetic design solutions. For such purpose, they have developed an innovative process that transforms plastic into designer recycled boards, giving it a new life.

[Forensio](#) is a company founded by Jan Pěňčík and David Bečkovský from the Faculty of Civil Engineering of BUT. This start-up provides independent expert advice in the construction industry for investors, developers and property owners. Since June 2024, it is one of the four entities with the trademark Start-up BUT. Forensio specializes in the inspection and audit of project documentation, construction and technical supervision, forensic engineering and reverse engineering. The founders' goal is not only to provide excellent services, but also to inspire academic colleagues to connect education with science, research and professional practice.

More support for international academic awards (Recommendations 3.10 and 3.11).

In addition to individual achievements on an international scale (see Professor Novák's honorary membership in the EUROSTRUCT association), the faculty has implemented a comprehensive system of internal evaluation and funding of departments, which also takes into account the citation acclaim of publications and international cooperation. The same aspects are also emphasized in the Fund of Excellence, which rewards individuals instead of entire departments. As a result, for example, Professor Vořechovský and Professor Kala are ranked in the top 2% of scientists of their main subfield discipline.

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)
Most important research projects	3.3 Research projects	https://www.fce.vutbr.cz/en/research/projects
Transfer of knowledge into practice	3.5 Transfer of results into practice	https://www.fce.vutbr.cz/en/cooperation
Research standards	3.7 Implementation of the recommendation	https://www.fce.vutbr.cz/en/research/standards

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: Faculty of Electrical Engineering and Communication (FEEC)

FORD: 2 - Engineering and technology

SOCIAL CONTRIBUTION OF THE EVALUATED UNIT

3.1 Introductory information about the unit under evaluation

The evaluated unit will describe its mission and vision and provide a general self-reflection of the societal contribution of R&D&I, along with its long-term goals in the fields it develops. The distribution of research activities by type of research will also be commented on.¹ The evaluated unit will describe its organisational structure and size (staffing, number of students, number of study programmes implemented, etc.) based on the data provided in annex tables 3.1.1 to 3.1.6.

Maximum 1000 words.

This is a non-rated indicator that serves as an introduction to the evaluated unit, providing context for data in indicators 3.2-3.7.

Self-assessment:

In terms of number of students, the Faculty of Electrical Engineering and Communication (herein after FEEC or Faculty) is nowadays the largest electrical engineering faculty in the Czech Republic, and is the third-largest faculty at Brno University of Technology (BUT). The prime aims of FEEC are quality education, R&D, technology and knowledge transfer and also popularization of its activities and results to broader society. All that is done not just at national level, but has even international impact thanks to our active cooperation with our academia and industry partners abroad.

The Faculty was established in 1959, starting with 5 departments with 4 professors and 49 other academic staff providing lectures for 48 students. Nowadays, the FEEC has [12 departments](#) and about 450 (headcount) academic and scientific staff. The Faculty was one of the key founders of the [Central European Institute of Technology](#) (CEITEC) in 2011, that is part of BUT and represents the center of research excellence. Since then, academic and science staff of the Faculty is also part of CEITEC [Research groups](#) and hence is involved in research activities of the CEITEC through joint R&D projects. Since the beginning until now, [prof. Pavel Václavek](#), who is with the Dept. of Control and Instrumentation at the Faculty, is also the leader of the [Cybernetics and Robotics](#) research group at CEITEC. Among other researchers, we mention [Dr. Jan Prášek](#) from Dept. of Microelectronics, who is also part of the [CEITEC Nano](#) group. Regarding research, intensive cooperation mainly in the research topics of Automotive and Electromobility and Nuclear Energy is also with the [NETME Center](#) that is hosted at the [Faculty of Mechanical Engineering](#). At our Faculty we operate the Centre for Research and Utilization of Renewable Energy that mainly provides service to academic and private sector in an open access format through [CVVOZEPowerLab](#) to support research on electrical switchgear, physics of switching arc, and/or diagnostics of faults in the structure of insulation materials.

¹ Basic, applied, contract, artistic research (see Definition of Terms in Methodology HEI2025+).

Within the Faculty campus Technicka, the students are educated in three-year Bachelor, follow-up two-year Master and four-year Doctoral study programs, provided in both [Czech and English](#). The curriculum is regularly updated to mainly address the trends in interdisciplinarity of engineering and non-engineering areas and also the Strategic Framework of the European Education Area. The newest study programs are [E-mobility and Sustainability](#) (Bachelor), Chip Design and Modern Semiconductor Technologies ([Bachelor](#) and [Master](#)), [Nuclear Power Engineering](#) (Master), [Space Applications](#) (Master), Information Security ([Bachelor](#), [Master](#), and [Doctoral](#)). Being aware of interdisciplinary character of the content, the above mentioned study programs are conducted in cooperation with the [Faculty of Mechanical Engineering](#), [Faculty of Chemistry](#), [Faculty of Civil Engineering](#) or [Faculty of Information Technology](#) within BUT and in case of Information Security study program, [Faculty of Law, Masaryk University](#) is also involved. In cooperation with [University of Applied Sciences Vienna](#) (Austria) we provide master study program [Bioengineering](#) as double-degree (DD). With [Tampere University](#) (Finland) we operate Master and Doctoral DD study programs [Communications and Networking](#) and [Electronics and Information Technologies](#), respectively. Within other doctoral study programs we cooperate e.g. with [Lappeenranta University of Technology](#) (Finland) under cotutelle agreements.

In average, annually the number of students is over 3200, of which over 25% are foreigners. This makes the Faculty highly competitive with other universities not just within the Czech Republic.

In R&D, the vision of the Faculty is *“Competitive science-oriented faculty with an international reputation reaching excellent R&D results with a high level of social relevance and contribution to scientific knowledge.”* To follow this vision, Faculty defined seven [Strategic Areas](#), namely Biomedical Engineering, Chip Design, Cybersecurity, e-Mobility, Energy Storage, Nuclear Engineering, and Space Applications. These strategic areas follow the [Key strategic areas of research](#) as identified by BUT. To also follow the Energy Storage strategic area, the Faculty was one of key founders of the [Czech Battery Cluster](#), that was established in 2022 and since then it has merged partners from public and private sectors dealing with individual aspects spanning from development, manufacturing, application to battery recycling. A Chairman of the Board is [Tomáš Kazda](#), who is also associate professor at the [Department of Electrical and Electronic Technology](#) of the Faculty. Similarly, in line with the Faculty strategic area Chip Design, we initiated establishing of the [Czech Semiconductor Centre](#) that is coordinated by [assoc. prof. Jiří Háze](#), the head of the [Department of Microelectronics](#).

The research teams of the Faculty contribute to the [Strategic Areas](#) through their R&D activities supported by research projects. Annually FEEC and its departments deal with over 150 international and national [projects](#) both of basic and applied research with the total annual budget of over 13.8 million EUR. These projects are solved by the Faculty departments directly or in cooperation with colleagues from CEITEC Center, NETME Center or other faculties of the university, such as Faculty of Chemistry or Faculty of Information Technologies. The research within these projects results in almost 200 journal papers annually, with the majority being published in Q1 and Q2 journals. Among the research team members of these R&D projects undergraduate students are also participate, which enables them to deal with real-life problems already during their study period. Later, these students are perspective to continue within Doctoral studies and their researcher career at the Faculty. If this is not the case, the graduates are employed by the industry easily, as more than 97% of students are employed in less than three months after graduation. This contributes to the continuous development of existing relationships with our industrial partners or to the establishment of new ones.

In addition to journal articles and conference proceedings, the results of applied research reached in collaboration with our industrial partners represent a significant part of our R&D activities and intellectual property. These results contribute to the successful technology and knowledge transfer,

which is further utilized in companies' products, or leads to establishing technology start-ups and spin-offs by the Faculty students, graduates and/or employees.

Besides joint activities in education, the Faculty cooperates with other University faculties in terms of joint R&D projects (see Section 3.3). Additionally, within the [Ethics Committee for Biomedical Research at FEEC](#), the committee provides review and supervises biomedical research projects involving investigation of human subjects for all University faculties. Annually the committee deals with about 10 relevant projects.

The high-quality achievements in education and R&D reached by the Faculty and its departments were also acknowledged by the [International Scientific and Advisory Board of BUT](#) within the evaluation process reviewing the Faculty R&D activities and achievements from the period [2019-2023](#). The international evaluators confirmed that the Faculty addresses current research topics and demonstrates outputs at outstanding or above-standard international level that correspond to excellent or very good standard in European comparison.

The progress and success of the Faculty in its R&D activities, its cooperation with industry and promotion of the R&D results to society is demonstrated in the Faculty [Annual Reports](#), [Faculty webpage](#) and its social media platforms ([Facebook](#), [X](#), [Instagram](#), [YouTube](#), [LinkedIn](#)), and aggregated in Sections below of this Self-evaluation Report.

Note: The text of this Self-evaluation report is supplemented by links to webpages denoted as blue underlined text, instead of including the full html address that would make reading the text inconvenient.

Table 3.1.1 - Staffing per FTE²

Academic/ Professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	27.0/1.7	27.9/1.7	27.9/1.7	28.9/1.6	26.8/1.1	138.5/7.8
Associate Professor	60.8/10.1	61.5/9.9	71.2/10.9	70.0/10.8	74.0/11.6	337.5/53.3
Assistant Professor	87.5/18.0	89.2/18.8	101.7/20.7	102.2/19.3	107.0/18.7	487.6/95.5
Assistant	10.0/5.4	10.2/5.7	8.9/5.0	11.5/7.2	14.4/9.0	55.0/32.3
R&D Personnel ³	0/0	0/0	0/0	0/0	0/0	0/0
Researchers in other categories ⁴	33.5/5.7	21.7/3.7	15.9/2.2	108.7/15.2	91.7/9.3	271.5/36.1
Technical and economic staff ⁵	189.0/65.3	183.3/64.8	189.4/66.2	93.6/55.7	92.0/57.3	747.3/309.3

² The average number of hours worked is calculated as the ratio of the total number of hours actually worked during the reference period, from 1 January to 31 December, by all staff (including agreement on work activity, excluding agreement on work performance) to the total annual working time pool per full-time employee. The full-time status of the worker in the evaluated unit is always reported. If an employee holds more than one type of full-time job within the evaluated unit, the total sum of the two shall be reported.

³ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

⁴ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

⁵ Who participates in the management and support of R&D&I in the institution.

Scientific, research and development staff involved in teaching activities	0/0	0/0	0/0	0/0	0/0	0/0
Early career researchers ⁶	7.2/1.0	16.1/3.0	9.0/2.8	10.1/3.0	16.7/2.1	59.1/11.9
Total ⁷	415.0/107.2	409.9/107.6	424.0/109.5	425.0/112.8	422.6/109.1	2,096.5/546.2

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

Table 3.1.2 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2019 (numbers of physical employees and personnel)⁸

Academic/ professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	5	0	8	0	7	1	13	1
Associate Professor	0	0	10	1	30	2	7	4	18	2	5	1
Assistant Professor	0	0	45	4	25	5	16	5	8	4	3	0
Assistant	1	1	3	1	4	2	2	2	0	0	0	0
R&D Personnel ⁹	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁰	9	3	23	2	12	2	2	0	2	0	2	0
Technical and economic staff ¹¹	79	16	85	13	48	24	28	15	20	10	10	1
Scientific, research and development staff involved in teaching activities	0	0	0	0	0	0	0	0	0	0	0	0
Early career researcher ¹²	0	0	10	2	0	0	0	0	0	0	0	0
Total ¹³	89	20	176	23	124	35	63	26	55	17	33	3

⁶ See Definition of Terms in Methodology HEI2025+.

⁷ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

⁸ The total number of employees/workers as of 31st December of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

⁹ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁰ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹¹ Who participates in the management and support of R&D&I in the institution.

¹² See Definition of Terms in Methodology HEI2025+.

¹³ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I Personnel, Researchers in other categories and technical and economic staff.

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D Personnel, Researchers in other categories and Technical and economic staff are mutually exclusive, i.e. one staff member is reported in only one category. The categories of scientific, research and development staff involved in teaching activities and early career researchers are reported collectively for all the above-mentioned categories.

Table 3.1.3 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2023 (numbers of physical employees and personnel)¹⁴

Academic/ professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	10	0	5	0	10	1	9	1
Associate Professor	0	0	9	1	41	4	17	4	10	2	8	2
Assistant Professor	0	0	43	7	56	9	14	3	6	3	2	0
Assistant	0	0	2	1	6	3	3	2	5	4	0	0
R&D Personnel ¹⁵	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁶	54	6	25	7	17	4	3	0	5	0	4	0
Technical and economic staff ¹⁷	10	2	13	7	35	25	21	17	19	11	4	3
Scientific, research and development staff involved in teaching activities	0	0	0	0	0	0	0	0	0	0	0	0
Early career researcher ¹⁸	0	0	25	3	0	0	0	0	0	0	0	0
Total¹⁹	64	8	117	26	165	45	63	26	55	21	27	6

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

¹⁴ The total number of employees/workers as at 31.12. of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

¹⁵ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁶ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹⁷ Who participates in the management and support of R&D&I in the institution.

¹⁸ See Definition of Terms in Methodology HEI2025+.

¹⁹ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

Table 3.1.4 – Students

Type of study	2019		2020		2021		2022		2023		Total	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Undergraduate	1,968	261	2,056	267	2,115	231	2,097	247	2,001	207	5,336	636
Master's ²⁰	839	120	815	120	781	121	834	115	844	120	2,331	333
Doctoral	8	50	349	58	312	51	309	54	298	47	524	89
Lifelong Learning Courses	90	13	0	0	60	7	49	7	111	15	279	37
Total	2,905	444	3,220	445	3,268	410	3,289	423	3,254	389	9,270	1,189

Table 3.1.5 - Study programmes in Czech/English

Type of study programme	Total ²¹ / Of which professional study programmes											
	2019		2020		2021		2022		2023		Total	
Undergraduate	9 / 1	0 / 0	9 / 1	0 / 0	9 / 1	0 / 0	8 / 1	0 / 0	9 / 1	1 / 0	11 / 2	1 / 0
Master's	4 / 2	0 / 0	12 / 4	0 / 0	12 / 6	0 / 0	12 / 7	0 / 0	12 / 8	0 / 0	14 / 10	0 / 0
Doctoral	2 / 1	0 / 0	9 / 5	0 / 0	8 / 8	0 / 0	8 / 8	0 / 0	8 / 6	0 / 0	10 / 9	0 / 0
Lifelong Learning courses	1 / 0	0 / 0	0 / 0	0 / 0	0 / 1	0 / 0	0 / 1	0 / 0	1 / 1	0 / 1	2 / 2	0 / 1
Total	16 / 4	0 / 0	30 / 10	0 / 0	29 / 16	0 / 0	28 / 17	0 / 0	30 / 16	1 / 1	37 / 23	1 / 1

Note: For each SP type, enter the number of SPs in Czech language in the first cell and insert the number of SPs in English language after the slash in the same cell (e.g. 15/3), enter the number of professional SPs in Czech language in the second cell and insert the number of professional SPs in English language after the slash. Follow a similar procedure in the last column of the table (Total).

Table 3.1.6 – R&D&I capacities

R&D&I field	FORD	FORD share [%]	Predominant type of research	Total share of industry group [%]
1. Natural Sciences	1.1 Mathematics	3.93	Basic Research	22.05
		4.08	Balanced basic and applied research	
	1.2 Computer and information sciences	5.21	Basic Research	
	1.3 Physical sciences	4.09	Basic Research	
	1.4 Chemical sciences	0.29	Basic Research	
	1.5 Earth and related environmental sciences	3.42	Basic Research	
	1.6 Biological sciences	1.03	Basic Research	
	1.7 Other natural sciences			

²⁰ All master's degree students are listed, regardless of the length of their programme of study.

²¹ The total number of study programmes for which admissions have been announced in a given academic year.

2. Engineering and Technology	2.1 Civil engineering		Zvolte položku.	73.40
	2.2 Electrical engineering, Electronic engineering, Information engineering	59.74	Balanced basic and applied research	
		1.93	Balanced basic and applied research	
	2.3 Mechanical engineering			
	2.4 Chemical engineering	0.06	Basic Research	
	2.5 Materials engineering	3.79	Basic Research	
	2.6 Medical engineering	3.50	Basic Research	
	2.7 Environmental engineering	0.89	Basic Research	
	2.8 Environmental biotechnology	0.15	Basic Research	
	2.9 Industrial biotechnology	0.07	Basic Research	
	2.10 Nanotechnology	2.53	Basic Research	
	2.11 Other engineering and technologies	0.74	Basic Research	
3. Medical and Health Sciences	3.1 Basic medicine	1.76	Basic Research	3.60
	3.2 Clinical medicine	1.19	Basic Research	
	3.3 Health sciences	0.65	Basic Research	
4. Agricultural and veterinary sciences	4.1 Agriculture, Forestry, and Fisheries	0.07	Basic Research	0.43
	4.2 Animal and Dairy science	0.22	Basic Research	
	4.3 Veterinary science	0.07	Basic Research	
	4.4 Other agricultural sciences	0.07	Basic Research	
5. Social Sciences	5.1 Psychology and cognitive sciences	0.30	Basic Research	0.45
	5.2 Economics and Business		Zvolte položku.	
		0.15	Balanced basic and applied research	
	5.3 Education			
	5.4 Sociology		Zvolte položku.	
	5.5 Law		Zvolte položku.	
	5.6 Political science		Zvolte položku.	
	5.7 Social and economic geography		Zvolte položku.	
	5.8 Media and communications		Zvolte položku.	
	5.9 Other social sciences		Zvolte položku.	
6. Humanities and the Arts	6.1 History and Archaeology		Zvolte položku.	0.07
	6.2 Languages and Literature	0.07	Basic Research	
	6.3 Philosophy, Ethics and Religion		Zvolte položku.	
	6.4 Arts (arts, history of arts, performing arts, music)		Zvolte položku.	
	6.5 Other Humanities and the Arts		Zvolte položku.	
Total		100 %	-	100 %

RECOGNITION BY THE RESEARCH COMMUNITY

3.2 Recognition by the research community

The evaluated unit will briefly comment on its position in the research community. It shall consider individual and other prestigious R&D&I awards, participation of its academic staff in the editorial boards of international scientific journals, elected membership in professional societies, major invited lectures given by the evaluated unit's academic staff abroad or by foreign scientists and other relevant guests at the evaluated unit. Additionally, it will address the involvement of staff in the evaluation of national or European project/programme calls over the period of 2019–2023 based on the data provided in annex tables 3.2.1 to 3.2.5 (max. 10 most relevant items). If necessary, the evaluated unit shall list any additional services to the scientific community that it considers relevant.

Maximum 1000 words.

Self-assessment:

The recognition of the Faculty's achievements by the research community is of different forms. As within the research projects being focused on basic and applied research and development, the first measure of recognition can be seen through the review process and the acceptance of our papers being published in high-quality scientific journals and renowned conferences. During the period 2019-2023 FEEC published 1185 papers in peer-reviewed journals indexed by Web of Science, with the majority in Q1 (22.2%@AIS, 39.7%@IF) and Q2 (40.1%@AIS, 35.0%@IF) journals (AIS – Article Influence Score, IF – Impact Factor). These results represent a significant improvement in publication activity not just regarding their quantity but more important also regarding their quality compared to previous period of evaluation i.e. 2014-2018, where just 884 scientific papers were published, with only 16.1%@AIS/21.5%@IF in Q1 and only 16.9%@AIS/20.7%@IF in Q2 journals. The improvement in quality of papers according to AIS and count in years is shown in Fig. 1 below. For the year 2014 all papers are N/A as their affiliation to specific AIS quartile is not known to BUT information system.

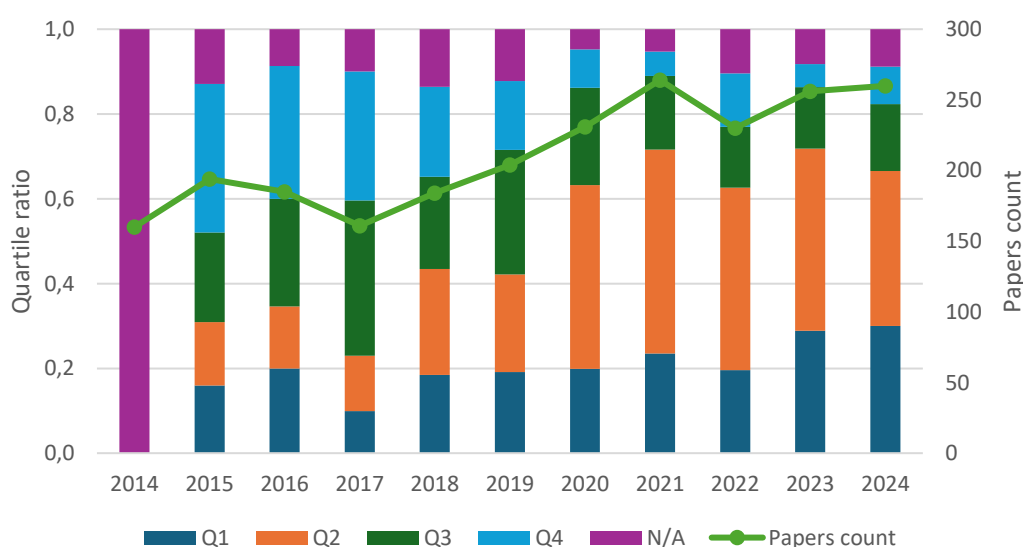


Figure 1. Ratio of publications according to AIS (for N/A the quartile was not assigned by WoS)

Strongly linked to publications, their citation in research papers is another measure proving high recognition of the Faculty and its results by the research community. Publications from the current

evaluation period have already accumulated 10,740 citations (10,263 without self-citations), marking an almost 150% increase from the 4,328 citations collected during the previous evaluation period. International collaboration, as measured by the number of papers co-authored with international partners, grew significantly from 47.97% to 60.87% (a 27% increase).

Reaching significant recognition of publication results and achievements of the Faculty research and academic staff leads to their invitations to become members of editorial boards of scientific journals such as [Vicentiu Radulescu](#), who serves as Editor-in-Chief in *Advances in Non-linear Analysis* journal (Table 3.2.2), speakers at international conferences, workshops and events organized by foreign universities and research institutions (Table 3.2.3). Among the most remarkable invited speakers we highlight [Jiří Mekyska](#) - head of the [BDALab](#), who was invited by [prof. Juan Ignacio Godino-Llorente](#) and gave [his presentation](#) at Massachusetts Institute of Technology (USA) about advanced analysis of speech to monitor and predict Parkinson's Disease within the [Automatic Assessment of Parkinsonian Speech Workshop](#).

Similarly, it is the recognition of our academic staff that results in the accepting our invitations by renowned researchers from abroad, who present their activities in the field of science and research at events organized by our Faculty (Table 3.2.4). Here we pinpoint [Kristina Edström](#) (h-index 72) from Uppsala University (Sweden), who deals with research in materials for batteries, whereas the energy storage is one of the Faculty's [Strategic Areas](#).

The scientific research activities of the Faculty's academic and scientific staff ensure its prominent and respected position in the research community. This privileged position is also proved both by numerous awards for scientific results (Table 3.2.1), such as the [Award of the Minister of Interior for extraordinary results in area of security research](#), and by the active involvement of our experts in prestigious advisory and evaluation bodies of national and international research funding institutions (Table 3.2.5), such as European Union – ERC Grants, MSCA, Estonian Research Council, The Czech Science Foundation. Here we again pinpoint [Jiří Mekyska](#) and his membership in [Science and Innovation Panel](#) of Innovative Health Initiative (IHI). He was elected by IHI to be one of only four representatives of the scientific community from the European Union. More success stories of the Faculty's research staff can be found on the Faculty's webpage - [News](#) and [Annual Reports](#). Next to the recognition of the research society of the Faculty's scientific staff through the gained awards, invited speeches or elected memberships, Faculty regularly (co)organizes a number of international conferences and workshops that follow the Faculty's [Strategic Areas](#) and hence the Faculty serves to the scientific community. Here, we mention:

- [International Scientific Conference on Electric Power Engineering \(EPE\)](#) The international conference alternatively organized by VSB - Technical University of Ostrava, Brno University of Technology, and the Czech Technical University in Prague. The main topics of the conference cover nuclear energy utilization, heating systems and intelligent buildings, smart grids, electric lighting, power quality, electrical machines and devices and regularly hosts over 60 researchers from the Czech Republic, Poland, Slovakia, Germany, Hungary, Portugal, etc. The conference is indexed by Web of Science and Scopus.
- [IFAC International Conference in Programmable Devices and Embedded Systems \(PDeS\)](#) This conference gives a floor to present and discuss modern concepts in control systems, reliability, safety and security of elements, circuits and systems, embedded systems and microcontrollers and their utilization in industrial applications. The conference is indexed by Scopus and hosts speakers from Bosnia and Herzegovina, Poland, Germany, UK, and Austria.
- [International Conference Advanced Batteries, Accumulators and Fuel Cells \(ABAF\)](#) This conference regularly organized by FEEC presents R&D results in materials for modern electrochemical power sources, new materials for conventional batteries, ionic liquids and their use, unconventional power sources including photovoltaic systems, corrosion of

materials in various environments, large-scale applications in the area of energy transport and storage and special electrochemical technologies.
- International Congress on Ultra Modern Telecommunications and Control Systems (ICUMT) This event co-organized together with Tampere University (Finland) annually hosts about 50 participants both from academia and industry to discuss their achievements and ideas in next generation wireless systems and services, information and coding theory, control systems or robotics and automation. The conference is indexed by IEEE Xplore and Scopus. - Workshop on Education, Training and Awareness in Cybersecurity (ATECS), International Workshop on Security and Privacy in Intelligent Infrastructures (SP2I) These workshops are co-organized within The International Conference on Availability, Reliability and Security (ARES) which is devoted to information security and related topics. This conference is CORE B and is indexed by Scopus. - International Conference Computing in Cardiology (CINC) is alternatively organized around the globe, in 2021 by our Faculty, and focuses on bioengineering, dominantly in using artificial intelligence in biomedical signal and image processing. The conference is indexed by Scopus. - MAREW/Radioelektronika is an international conference being regularly organized by FEEC. The scope focuses on information and communication technologies, mainly space and aerial communications, physical layer circuits and systems design, such as antennas, chip design, or photonics. The conference is indexed by IEEE Xplore, Web of Science and Scopus. - Symposium of Physics of Switching Arc (FSO) is a biennial international conference giving the floor for information, knowledge and experience exchange in the interdisciplinary field of the arc plasma physics and technology. The conference is indexed by Scopus and hosts speakers from all over the world (Germany, France, Switzerland, China, South Korea, Japan, Australia, and so on). The contributions are regularly published in Plasma Physics and Technology journal.

Table 3.2.1 - Prestigious R&D&I awards granted during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the award	Awarding institution
Ing. Willi Lazarov	EY ESO Cyber Security Future Promise	Ernst & Young, s.r.o.
Ing. Alexandr Otáhal, Ph.D.	Golden Amper 2022	TERINVEST, spol. s r. o.
Doc. Ing. Petr Baxant, Ph.D.	Golden Amper 2019	TERINVEST, spol. s r. o.
Ing. Jakub Nemček	Siemens Healthcare	Siemens
doc. Ing. Tomáš Kazda, Ph.D.	Best scientific paper November 2019	Journal of Materials Science (ISSN 1573-4803)
doc. Ing. Martin Štumpf, Ph.D.	The Czech Science Foundation President's Honorary Recognition	The Czech Science Foundation
Doc. Ing. Petr Münster, Ph.D., Ing. Tomáš Horváth, Ph.D.	Electromagnetic Security & TEMPEST 2019	National Cyber Security Centre (NCSC)
Ing. Pavla Šabacká	Josef Hlávka Award 2019	Hlavkas Foundation Nadace „Nadání Josefa, Marie a Zdeňky Hlávkových“
Ing. Karel Juřík	Professor Daniel Mayer Award 2023	Hlavkas Foundation Nadace „Nadání Josefa, Marie a Zdeňky Hlávkových“
prof. Ing. Jiří Mišurec, CSc. doc. Ing. Zdeněk Martinásek, Ph.D. doc. Ing. Radek Fajdiak, Ph.D. Ing. Willi Lazarov	Award of the Minister of Interior for extraordinary results in area of security research 2023	Ministry of Interior of the Czech Republic

Note: Provide up to 10 examples.

Table 3.2.2 Participation of academic staff of the evaluated unit in editorial boards of international scientific journals during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of scientific journal, ISSN
Vicentiu Radulescu, Ph.D.	Advances in Non-linear Analysis , De Gruyter, ISSN: 2191-950X. Editor-in-Chief (since 2023), AIS: Q1
doc. Mgr. Zdenka Fohlerová, Ph.D.	Frontiers in Bioengineering and Biotechnology , Frontiers, ISSN: 2296-4185, Guest Editor (2021-2022), AIS: Q1
doc. Ing. Roman Šotner, Ph.D.	IEEE Transactions on Instrumentation and Measurement , IEEE, ISSN: 0018-9456, Associate editor (since 2020), AIS: Q1
prof. RNDr. Petr Vanýšek, CSc.	Journal of the Electrochemical Society , The Electrochemical Society ISSN 1945-7111, Editorial Board Member (2016-2022), AIS: Q2
doc. Ing. Norbert Herencsár, Ph.D.	IEEE Consumer Electronics Magazine , IEEE, ISSN 2162-2248, Editor-in-Chief (since 2022), AIS: Q2
Doc. Ing. Norbert Herencsár, Ph.D.	Engineering Science and Technology-An International Journal-JESTECH , Elsevier, ISSN 2215-0986, Editorial Board Member (since 2023), AIS: Q1
doc. Ing. Norbert Herencsár, Ph.D.	Scientific Reports , Nature, ISSN 2045-2322, Editorial Board Member (since 2023), AIS: Q1
prof. Ing. et Ing. Fabian Khateb, Ph.D. et Ph.D.	IEEE Access , IEEE, ISSN: 2169-3536, Associate Editor (since 2021), AIS: Q2
Ing. Adam Chromý, Ph.D.	Electronics , MDPI, ISSN: 2079-9292, Editorial Topic Board Member (2021-2023), AIS: Q2
prof. Ing. Zdeněk Smékal, CSc.	Cognitive Computation , Springer Nature, ISSN: 1866-9956 Editorial Board member, (since 2012), AIS: Q2

Note: Please provide up to 10 examples of academic staff participation in editorial boards of international scientific journals (e.g. editor, editorial board member, etc.).

Table 3.2.3 The most important invited lectures delivered by the academic staff of the evaluated unit at foreign institutions during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Invited lecture title	Name of host institution, or name of conference or event	Year
doc. Mgr. Lenka Zajíčková, Ph.D.	Significance of Free Radicals and Unsaturated Bonds in Amine Plasma Polymers	MRS Fall Meeting, Boston (USA)	2023
prof. Josef Diblík, DrSc	Exponential Stability of Linear Discrete Systems with Multiple Delays	The 10th International Congress on Industrial and Applied Mathematics (ICIAM 2023)	2023
doc. Ing. Ladislav Polák, Ph.D.	LoRa in the 2.4 GHz Band – Coexistence Issues and Indoor Localization	7th International Conference on ACIMUTT-FIDTV'22	2022
doc. Ing. Martin Štumpf, Ph.D.	Invited Seminar: Transient Electromagnetic Plane Wave Scattering by a Time-Varying Metasurface: A Time-Domain Approach Based on Reciprocity	IEEE Journal on Multiscale and Multiphysics Computational Techniques	2023
prof. Ing. Roman Maršálek, Ph.D.	Invited talk: Millimeter-wave 60 GHz Transceivers with RF Impairments	Silicon Austria Labs GmbH / Johannes Kepler University Linz (Austria)	2022
doc. Ing Jan Bárta, Ph.D.	Squirrel Cage High-Speed Induction Machines	Johannes Kepler Universität Linz (Austria)	2019

doc. Ing. Jiří Mekyska, Ph.D.	Acoustic Analysis of Hypokinetic Dysarthria as a Monitoring and Predictive Tool in Parkinson's Disease	Massachusetts Institute of Technology (USA)	2019
Ing. Stanislav Klusáček, Ph.D.	Research in Smart Sensors and Devices for Advanced Technical Diagnostics	Department of Electrical and Biomedical Engineering University of Nevada Reno (USA)	2023
doc. Ing. Tomáš Kazda, Ph.D.	From Li-ion to Post-Lithium-ion Batteries	Polytechnic University of Turin (Italy)	2019
doc. Ing. Jiří Mekyska, Ph.D.	Data Science in Small Medical Data Sets: From Logistic Regression Towards Logistic Regression	Johns Hopkins University (USA)	2021

Note: Provide up to 10 examples.

Table 3.2.4 - The most important lectures by foreign scientists and other guests relevant to R&D&I at the evaluated unit during the evaluation period

Name, surname and title(s) of the lecturer	Lecturer's employer at the time of the lecture	Invited lecture title	Year
Vicentiu Radulescu, Ph.D.	University of Craiova (Romania)	Double-Phase Elliptic Equations; Concentration of the Spectrum and Problems with Mixed Regime	2022
Alon Ascoli, Assoc. prof.	Technical University Dresden (Germany)	A Systematic Approach to Circuit Design with Locally-Active Memristors	2022
Rodney Martinez Alonso	INTEC-WAVES Ghent University (Belgium)	Multi-Objective Optimization of Dynamic Spectrum Access Networks	2021
Eduardo Garro Crevillen	Universitat Politècnica de Valencia (Spain)	iNGENIOUS: Next Generation IoT for the Next-Generation Supply Chain	2021
Assoz. Univ. Prof. DI Dr. Gerd Bramerdorfer	Johannes Kepler Universität Linz (Austria)	Quantifying the Impact of Tolerances on the Electric Machine Performance	2022
prof. Marcos Faundez Zanuy, Ph.D.	Pompeu Fabra University, Escola Superior Politécnica (Spain)	Multimodal Analysis for e-Health: Simultaneous Handwriting and Eyetracking	2023
Prof. Kristina Edström	University Uppsala (Sweden)	Battery 2030+	2022
Pierrick Lotton	Le Mans University (France)	MEMS Speakers: Models and Applications	2022
Prof. Wahab Almuhtadi	Algonquin College, Ottawa (Canada)	State-of-the-art and Practical Aspects of Optical Communications	2021
Associate Professor Dr. Mario Hirz	Graz University of Technology (Austria)	Introduction to Automotive Electronics Systems	2022

Note: Provide up to 10 examples.

Table 3.2.5 - Involvement in the evaluation of national/European research project/programme calls relevant to the R&D&I area at the unit during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the research project/programme call	Name of the contracting authority/guarantor of the project/programme call	Year
prof. Ing. Valentýna Provazník, Ph.D.	Standard, international Lead Agency projects	The Czech Science Foundation	Since 2022
doc. Mgr. Lenka Zajíčková, Ph.D.	Fonds de la Recherche Scientifique	Agency for research within the French-Speaking Community of Belgium	2019-2022
prof. RNDr. Josef Diblík, DrSc.	panel Mathematics and Computer Science	National Research, Development and Innovation Office of Hungary	2021, 2022
doc. Mgr. Zdenka Fohlerová, Ph.D.	DOPRAVA 2020+ - funding program od applied research, experimental development and innovation in transportation	Technology Agency of the Czech Republic	2020
doc. Ing. Dinara Sobola, Ph.D.	HORIZON-MSCA-2024-PF-01	Marie Skłodowska-Curie Actions, European Commission	Since 2022
prof. Ing. Lubomír Brančík, CSc.	Evaluator of RCL research projects	Research Council of Lithuania	2019
prof. Ing. Jan Hajný, Ph.D.	ERC Consolidator Grants - panel PE6 – Computer Science	European Research Council, European Commission	Since 2022
doc. Ing. Jiří Mekyska, Ph.D.	Member of Science and Innovation Panel	Innovative Medicines Initiative	Since 2019
doc. Ing. Norbert Herencsár, Ph.D.	Chair, Expert Panel on 'Electrical, electronic and information engineering'	Estonian Research Council (ETAg) , Estonia	2022-2024
prof. Ing. Jaroslav Koton, Ph.D.	Panel „P102 - Electrical Engineering and Electronic Engineering“, Panel Chair (2023, 2024), Panel member, project evaluator (2025, 2026)	The Czech Science Foundation	Since 2023

Note: Provide up to 10 examples.

RESEARCH PROJECTS

3.3 Research projects

The evaluated unit shall list at most 10 (considered most significant by the evaluated unit) research projects/activities (regardless of whether they are supported by public funds or based on contract research²²) that it has implemented or participated in during the period of 2019–2023²³. This should be done from the full list in annex tables (Table 3.3.1–3.3.2)²⁴, regarding particularly the results achieved or the application potential of the projects. The unit should also describe how the research projects contributed to the mission and purpose of the evaluated unit. If the evaluated unit has been a participant in listed project, it shall indicate which other entities were involved and describe its contribution to the project. The interdisciplinary aspects of the projects will also be commented on, along with any collaboration with other units of the evaluated HEI.

Maximum 300 words per project.

Self-assessment:

Annually FEEC and its departments deal with over 150 international and national projects with the total budget over 13.6 mil EUR (in average in the period 2019-2023). These projects follow the [Faculty Vision](#) and make the Faculty highly science-oriented and competitive as the projects are also tightly linked to Faculty [Strategic Areas](#). The below selected projects are of both basic and applied research. These projects lead to outstanding results that already have significant social relevance (see Section 3.4). Some of these selected projects also address the interdisciplinary dimension and take advantage of cooperation with research teams hosted at other university faculties and/or [CEITEC](#) or [NETME](#) research centres. Reaching higher recognition within the research community, we became part of more international consortia. Subsequently, we are significantly successful in being supported within international funding schemes (H2020, HEU, MSCA, COST Action, NATO, ONR USA). Compared to the previous evaluation period (i.e. 2014-2018) we increased the revenues from international projects from 1,406 kEUR to 2,704 kEUR for the current evaluation period (i.e. 2019-2023), which represents an increase of 92%.

Next to basic or applied research-oriented projects, we also cooperate with the industry sector through Contract research. Annually, we deal about 90 contracts with companies from the Czech Republic and abroad (in Table 3.3.2 denoted in bold), whereas only companies with contracts above 1000 EUR (each) are listed in this table. Such direct cooperation with companies enables both parties to understand their specific needs and initiate mutual cooperation that later leads to joint research projects. As in the case of research projects, contract research also significantly contributes to knowledge transfer (see Section 3.5).

The development of revenues from national and international R&D projects and Contract research for the years since 2014 is shown in Fig. 2.

²² For the definition of contract research for the purposes of evaluation in the HE segments, see Article 2.2.1 of the Community Framework for State Aid for Research, Development and Innovation 2014/C 198/01.

²³ Regardless of whether the projects are completed or still ongoing, provided that at least part of the project was implemented during the evaluation period.

²⁴ The evaluated unit shall only fill tables that are relevant to it.

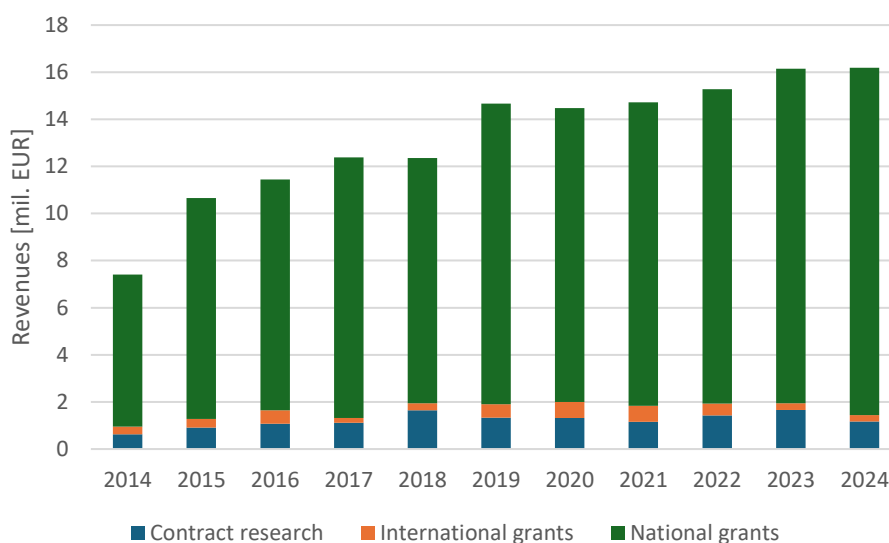


Figure 2. Revenues from R&D projects and Contract research

Project name: [SPARTA - Special projects for advanced research and technology in Europe](#)

Provider of the funding, project number: H2020, ID: [830892](#)

Budget: 15,999,913 EUR (total cost), 15,999,913 EUR (EU contribution), 452,140 EUR (for BUT)

Years of realizations: February 2019 – January 2022

BUT principal investigator: [prof. Jan Hajný](#)

The project gathered 44 participants from all over Europe with the aim of developing a competence net, identifying topics for future research, and creating innovative strategies for European protection from cybernetic threats. Our tasks focused on training and raising awareness in cybersecurity and research into modern cryptography for the Internet of Things (IoT). Furthermore, we also focused on digital identity protection, privacy protection, and personal data misuse. The main results we contributed the most are publications describing cryptographic protocols for constrained devices (see e.g. Malina *et al.*, ARES 2019, doi: [10.1145/3339252.3340503](#)), [software tools](#) for cybersecurity curricula design, and strategic documents containing roadmaps for the [European Cybersecurity Competence Centre](#), the official European cybersecurity coordination initiative.

Our involvement in this project significantly boosted the research in cybersecurity and continues in follow-up projects such as the [Cyber-security Excellence Hub in Estonia and South Moravia](#) (CHESS, #101087529) or [Network Cybersecurity in Post-Quantum Era](#) (NESPOQ, #VJ01010008).

Project name: [AutoDrive - Advancing fail-aware, fail-safe, and fail-operational electronic components, systems, and architectures for fully automated driving to make future mobility safer, affordable, and end-user acceptable](#)

Provider of the funding, project number: H2020, ID: [737469](#)

Budget: 64,569,691.44 EUR (total cost), 16,163,362.92 (EU contribution), 857,500 EUR (for BUT)

Years of realizations: May 2017 – October 2020

BUT principal investigator: [prof. Pavel Václavek](#)

The project significantly contributes to the area of e-Mobility and fully automated (autonomous) driving. AutoDrive aims for the design of (i) fail-aware (self-diagnostics), (ii) fail-safe, (iii) fail-operational (HW and SW redundancy) electronic components and systems architecture that enable the introduction of automated driving in all car categories. AutoDrive results significantly

contribute to safer and more efficient mobility. They raise end-user acceptance and comfort by supporting drivers in highly challenging situations (active safety) as well as in regular driving situations. Combining both will reduce the number of road fatalities especially in rural scenarios and under adverse weather conditions. The team at FEEC together with colleagues from [CEITEC](#) research centre contributed to two key areas. (i) Fail-operational powertrain where we developed novel control framework for multiphase machines allowing operation under faulty conditions, which provides higher reliability, availability and user-acceptance for future vehicles. (ii) Fail-operational machine perception systems allowing safe operation of automated vehicles in the case of sensor failures or demanding weather conditions. Our main deliverable within this project is the [Atlas, the sensory framework for self-driving cars](#) (see Section 3.4). This platform is a measuring device for sensing the surroundings of a vehicle, including artificial intelligence-based algorithms to process the sensed data.

We further continue the research in e-Mobility area, e.g. being currently part of an HE project [ArchitectECA2030](#) tackling the requirements on safety, security and reliability in autonomous vehicle operation. This HE project is being solved together with colleagues from [CEITEC](#) research centre.

Project name: [Health and activity monitoring by wearables in extreme conditions](#)

Provider of the funding, project number: The Office of Naval Research (ONR), ID: N00014-18-S-B001

Budget: 188,133 EUR (218,075 USD)

Years of realizations: January 2019 – December 2021

BUT principal investigator: [Dr. Lukas Smital](#)

The project focused on advancing the analysis of biological signals from wearable devices to enable real-time monitoring in free-living and extreme conditions, such as those experienced by firefighters or soldiers. The primary objective was to develop computationally efficient methods for classifying biosignals, such as ECG, PPG, and motion data, based on their quality and usability for subsequent analysis. By tailoring analysis techniques to the assessed signal quality, the project aimed to enhance diagnostic accuracy and maximize the usability of data collected under challenging conditions. This research directly addressed the growing demand for reliable self-monitoring tools in wearable technology, particularly for cardiovascular health. The research led to impactful results, including a robust algorithm for real-time ECG signal quality assessment (e.g., doi: [10.1109/TBME.2020.2969719](#)), specifically designed for long-term recordings. The project's scope extended to PPG analysis, particularly exploring the feasibility of monitoring heart rate, blood oxygen saturation, and blood pressure via smartphones (doi: [10.1016/j.bspc.2020.101928](#)). This effort was complemented by a database of smartphone-acquired PPG signals annotated for quality (dois: [10.13026/tn53-8153](#), [10.1155/2021/3453007](#)) enabling further algorithmic development within the research community. Additionally, respiratory rate estimation methods tailored for wearable devices capable of measuring ECG and PPG signals were explored. These results provide a solid foundation for integrating multi-signal approaches into real-world applications, particularly in dynamic and demanding environments.

Collaboration with the Mayo Clinic (USA) was a cornerstone of the project, offering critical expertise that shaped the research outcomes, and contributes to the Biomedical Engineering [Strategic Area](#) of the Faculty. Their input ensured the clinical relevance of the results and facilitated the translation of findings into practical applications for health monitoring in real-world scenarios.

Project name: [Development of new electrochemical power storage: accumulators](#)

Provider of the funding, project number: MEYS INTER-EXCELLENCE, ID: LTT19001

Budget: 497,041 EUR (12,600,000 CZK)

Years of realizations: March 2019 – December 2022

BUT principal investigator: [assoc. prof. Tomáš Kazda](#)

In the framework of the Inter-excellence project, which was carried out between 2019 and 2022 at the Department of Electrical and Electronic Technology, we have been working on the research of materials for Na-ion and Li-S batteries, which can replace the currently used Li-ion batteries with their specific properties. Within the project, materials based mainly on Metal–organic framework were tested, either as active material or as additive, and different types of binders improving the stability of the electrodes. Within the project, Li-S laboratory pouch cells with modified binder were produced and tested. The results of the project were published and accepted by the research community. We may mention the paper D. Skoda *et al.* (doi: [10.1016/j.est.2019.101113](https://doi.org/10.1016/j.est.2019.101113)) that presented the facile microwave-assisted synthesis of a platelet-like cobalt-based metal-organic framework (MOF) material, where we show that it is a promising anode material for practical Na-ion batteries thanks to its easy preparation and fast synthesis. This paper counts 27 citations (excluding auto-citations), e.g. by researchers from Sorbonne University or Helmholtz Zentrum Berlin. A significant contribution of the project was also presented in paper by Capkova *et al.* (doi: [10.1016/j.est.2022.104419](https://doi.org/10.1016/j.est.2022.104419)), where Metal-organic framework MOF-76(Gd) was synthesized, characterized and applied as a matrix for sulphur in Li-S battery.

Thanks to the knowledge and experience gained within this project, we successfully continue the research of energy storage within the project [Energy conversion and storage](#) (ECO&Stor), funded by the Johannes Amos Comenius Programme, call Excellent Research, being solved with 4 other major research institutions in the Czech Republic, namely University of Chemistry and Technology, Prague, Czech Technical University in Prague, J. Heyrovsky Institute of Physical Chemistry of the Czech Academy of Sciences, and Charles University.

Project name: [Development of an integrated concept for the deployment of innovative technologies and services allowing independent living of frail elderly \(niCE-life\)](#)

Provider of the funding, project number: Interreg Central Europe, ID: [CE1581](#)

Budget: 2,117,580.95 EUR, 270,000 EUR (for BUT)

Years of realizations: September 2019 – June 2022

BUT principal investigator: [assoc. prof. Radim Burget](#)

The niCE-life project aimed to foster social inclusion and care coordination of frail elderly with focus on persons with cognitive medium/low deficits including Alzheimer's and Parkinson's diseases and other chronic diseases. In the consortia of 10 partners from 6 EU countries we developed a transnationally replicable [health and care model](#), powered by intelligent monitoring platform and novel technological solutions in health and care of frail elderly. We also targeted trainings and local action plans strengthened capacity of local/regional authorities and care providers to efficiently tackle social challenges stemming from the ageing of the society and increased frailty of elderly persons. The introduced health and care models allow more efficient coordination of health and care of frail elderly and chronically ill patients discharged from hospital and better communication with them. The project also contributed to other outputs, such as [Pilot actions](#) showcasing the technological and societal advancements achieved in elderly care.

Building on its success, the niCE-life project secured continued research within national project "[Early COVID-19 infection detection system for the safety of vulnerable groups using artificial intelligence](#)" (Reg. No. VI04000039) grant for AI-based COVID-19 detection and the "[New Technologies for Digital Healthcare](#)", EU funded project, developing new AI driven diagnostic methods.

Project name: [Digital spectrometer of mixed neutron and photon fields](#)

Provider of the funding, project number: Ministry of Industry and Trade CZ, ID: FV20453

Budget: 828,678 EUR (21,007,000 CZK), 2,246,000 CZK/88,599 EUR (for BUT)

Years of realizations: July 2017 – December 2019

BUT principal investigator: [Dr. Michal Kubíček](#)

This applied research-oriented project contributed to the area of nuclear engineering and was solved together with [VF, a.s.](#) company, major manufacturer and supplier of equipment and systems for radiation control and protection worldwide. The main objective of the project was to develop a completely new measurement device (spectrometer system) that enables real-time characterization of low-energy mixed fields of neutron and gamma radiation ranging from 1 keV to 1 MeV. The aim of this project was reached by developing Energetically-Compensated Monitor of Equivalent Dose Quantity of Neutrons, which allows detection of gamma particles and neutrons at the same time. Nowadays, this monitor is part of the product portfolio of the VF, a.s. company as [SGN-02 probe](#) (see Section 3.4). These activities and joint research results foster the Nuclear Engineering [Strategic Area](#).

This joint R&D project sparked further independent scientific cooperation with the VF, a.s. company in the area of low-energy neutron spectroscopy based on proportional counters. The development is now underway in cooperation with other partners, namely: [The Institute of Power Engineering and Environmental Technology of TU Dresden](#), [The department of Computer Systems and Communications of Masaryk University](#), [The Institute of Scientific Instruments of the Czech Academy of Sciences](#), [The Research Center Rez](#), and [The Department of Mathematics and Physics of the University of Defence Brno](#). The consortium is currently experimentally verifying the functionality of the measuring apparatus with different types of detectors on different types of neutron radiation sources. At the same time, we are collaborating on the development and manufacturing of new types of proportional counters, improving the parameters of the electronic subsystems for processing signals from the counters, and implementing new algorithms for the discrimination of the types of detected radiation using machine learning.

Project name: [Innovative linear electro-mechanical actuators](#)

Provider of the funding, project number: Technology Agency of the Czech Republic, ID: FW01010148

Budget: 1,762,840 EUR (44,688,000 CZK, 7,201,000 CZK/284,063 EUR (for BUT)

Years of realizations: January 2020 – September 2022

BUT principal investigator: [assoc. prof. Jan Bárta](#)

This project contributes to e-Mobility by developing, producing and verifying electromechanical actuators of two different load ratings, intended to be used for primary flight control surfaces of CS-23 an Urban Air Mobility aircraft. The project was solved in cooperation with [Honeywell International](#) and [ATAS Electromotors Náchod](#), whereas colleagues from the Faculty of Mechanical Engineering were also involved in this project. The two prime results are the EMA1 and EMA2 (see Section 3.4) fully assembled electro-mechanical actuators, consisting of the mechanical part of the actuator and the PMSM motor with integrated resolver with nominal power of 3000 N and 1000 N, respectively.

Developed electromechanical actuators do not only enhance the efficiency of primary flight control systems but also contribute significantly to the broader trend of aircraft electrification. By replacing traditional electro-hydrostatic actuators, they enable a 7% weight reduction per unit, which, when scaled across an aircraft's control surfaces, can lead to a total weight savings of up to 50 kg per aircraft. This reduction minimizes the reliance on hydraulic components and fluids, ultimately

lowering fuel consumption and emissions while improving overall aircraft performance and sustainability.

The research in actuators and electric machines further continues, as being part of e-Mobility, one of the Faculty's [Strategic Area](#). We may mention the currently solved Horizon Europe project [Reliable Powerdown for Industrial Drives \(R-PODID\)](#), being solved in cooperation with [CEITEC](#) centre. Strong cooperation also continues with the [NETME](#) centre within the project [National Competence Centre of Mechatronics and Smart Technologies for Mechanical Engineering](#) (reg. No. TN02000010) aiming to develop mechatronic and engineering products, processes, and services being more environmentally friendly, more sustainable, smarter, and more competitive.

Project name: [Development of the system for asymmetrical fault location V-dip](#)

Provider of the funding, project number: Technology Agency of the Czech Republic, ID: TK01020107

Budget: 869,033 EUR (22,030,000 CZK), 5,011,000 CZK/197,672 EUR (for BUT)

Years of realizations: July 2018 – June 2021

BUT principal investigator: [assoc. prof. David Topolánek](#)

We were dealing this experimental development project in consortia of [ELVAC a.s.](#) and [K M B systems, s.r.o.](#) companies together with the [Technical University of Liberec](#). ELVAC company deals with automation, power energy and custom computer technologies. K M B systems company primarily focuses on solutions for smart grids, transmission and distribution grids, industrial and commercial energy management, building automation, and all other kinds of power generation projects.

The aim of this project was to develop a complete system for asymmetric faults location in medium voltage networks, by ELVAC commercially called and sold as [Vdip system](#). The issue of locating ground connections has been addressed in the field of distribution grids for decades. However, satisfactory results in terms of speed and accuracy of localization have not been achieved yet. Therefore, we have developed the Vdip system that uses distributed measuring units and is linked to dispatching systems of energy distribution grid. Based on the data collected from these units, Vdip ensures quick and accurate localization of an earth fault resulting in reduced time of out-of-energy states in the grid sections. Additionally, the Vdip system provides continued power quality monitoring. Research of our Faculty is behind the idea and methods that resulted in the Vdip system, whereas BUT has full ownership of intellectual property.

We continue the research in power grids, currently e.g. with the ELVAC company we deal the project [Information Fusion of Real-Time Data Streams for Energy Management in Emerging Power Grids](#) (supported within international EnerDigit Call 2023) aiming to develop tools to maintain the stability of the distribution network operation during the interconnection of 2 supplied areas. These activities contribute to sustainability issues that are discussed with the e-Mobility [Strategic Area](#).

Project name: [Scalable Ioniser for Space Technology and Laboratory Applications](#)

Provider of the funding, project number: Technology Agency of the Czech Republic, ID: FW06010622

Budget: 965,167 EUR (24,467,000 CZK), 6,318,000 CZK/249,230 EUR (for BUT)

Years of realizations: January 2023 – December 2025

BUT principal investigator: [assoc. prof. Petr Drexler](#)

We participate in this project together with [SpaceLab EU, SE](#) (principal investigator) and [PlasmaSolve](#) companies, with the aim to develop a low-pressure plasma source that is capable of

operating in various gases and at a wide range of pressures, whereas the plasma source will be complemented by a digital twin computational model. The project responds to the fragmentation of the plasma source market and the diversity of technical solutions in the electric propulsion and laboratory ionizer segments. The plasma source developed in the project will use an innovative type of plasma excitation combining capacitively coupled plasma with electron-cyclotron resonance, which will allow its scalability for different volumes, pressures and powers. The digital twin model will then ensure the predictability of the ioniser. The plasma source is designed with a view to future use for propulsion of satellites in very low Earth orbits (VLEO). In this project, the main tasks of the Faculty members focus on the actual construction of the source, in particular on the high-frequency resonators that excite the plasma in this source. Although the project primarily targets the space technology sector (private and public), semiconductor and biotechnology industry are also taking significant advantage from the project results.

Project name: [Novel self-organized nanorod arrays of molybdenum anodic oxides, compounds and heterostructures as emerging multipurpose electronic nanomaterials](#)

Provider of the funding, project number: Czech Science Foundation, ID: GA23-07848S

Budget: 297,357 EUR (7,538,000 CZK)

Years of realizations: January 2023 – December 2025

BUT principal investigator: [Dr. Alexander Mozalev](#)

In this basic research project, we aim in research of novel approaches suitable for synthesis of unique MoOx-based nanorods arrays, doped with weak- or strong-interacting solids or having a core-shell heterostructure, vertically aligned on substrates. The first results of the project were already presented in the paper “XPS characterization of metal-oxide nanocolumn arrays via anodizing Al/Nb/Mo metal layers” (doi: [10.37904/nanocon.2023.4751](https://doi.org/10.37904/nanocon.2023.4751)), processing 25-nm Nb/Mo layers for the first time to enable successful growth of chemically stable molybdenum-oxide-containing nanogoblet and nanocolumn arrays. Advancing the performance and reducing the manufacturing costs of modern electronic devices for generation, storage and utilization of renewable energy are becoming challenging tasks nowadays, which may only be solved through creating completely new nanostructured electronic materials with unusual or highly improved properties and performances. Gaining the insight into the fundamental ion transport phenomena and relevant chemical and solid-state reactions, disclose the mechanisms of oxide nucleation and growth we determine the functionality of MoOx-based anodic nano-oxides for potential applications in emerging nanoscale electronic, optoelectronic, integrated energy conversion and storage devices. Hence, the expected R&D results may contribute to several [Strategic Areas](#) of the Faculty.

Table 3.3.1 Projects supported by public funds

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
FP7 (EU)		5,540/218,533	1,721/67,887	0/0	0/0	0/0
H2020 (EU)		4,559/179,827	7,928/312,743	7,680/302,953	6,801/268,277	2,360/93,106
HE (EU)		0/0	0/0	0/0	1,134/44,723	0/0
Interreg (EU)		250/9,872	1,891/74,583	1,759/69,396	1,751/69,073	0/0
Ministry of Education, Youth and Sports (national)		6,330/249,704	6,011/237,118	4,118/162,446	3,984/157,160	71/2,783
Technology Agency of the Czech Republic (national)		30,167/1,190,013	40,260/1,588,166	29,069/1,146,721	31,114/1,227,389	31,295/1,234,517
Ministry of the Interior of the Czech Republic (national)		10,447/412,112	10,626/419,167	30,172/1,190,203	40,615/1,602,187	57,636/2,273,591
Czech Science Foundation (national)		19,417/765,953	16,398/646,877	15,339/605,094	13,299/524,616	20,902/824,527
Other international		1,811/71,450	1,526/60,181	1,437/56,693	655/25,847	546/21,526
Other national		164,818/6,501,678	136,664/5,391,075	131,582/5,190,629	135,235/5,334,698	132,967/5,245,261
Total		243,338/9,599,144	223,024/8,797,796	221,157/8,724,134	234,588/9,253,970	245,776/9,695,311
In the role of another participant						
Provider ²⁷	Project name	Support (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
H2020 (EU)		1,032/40,691	257/10,123	724/28,576	722/28,475	903/35,611
HE (EU)		0/0	0/0	0/0	0/0	2,026/79,928
Interreg (EU)		1,178/46,459	3,656/144,217	3,229/127,382	933/36,819	0/0
ERASMUS (EU)		0/0	0/0	2,292/90,427	769/30,352	1,270/50,080
Ministry of Education,		609/24,036	845/33,333	823/32,465	319/12,584	0/0

²⁵ If the provider is from abroad, please indicate the provider's country of origin in brackets. For the determination of the country of origin of the provider, the place of residence of the provider is decisive.

²⁶ Indicate the total amount expressed in thousands of CZK and the conversion of the total amount into Euro.

²⁷ Ibid.

Youth and Sports (national)						
Technology Agency of the Czech Republic (national)		47,889/1,889,100	61,245/2,415,970	72,144/2,845,917	78,106/3,081,104	90,960/3,588,182
Ministry of the Interior of the Czech Republic (national)		19,279/760,498	19,884/784,392	22,956/905,547	26,116/1,030,213	19,729/778,252
Ministry of Industry and Trade (national)		19,874/783,985	21,437/845,647	16,125/636,090	4,081/160,985	0/0
Ministry of Health (national)		1,254/49,467	2,111/83,284	3,590/141,617	2,463/97,160	2,453/96,765
Czech Science Foundation (national)		3,308/130,502	857/33,807	0/0	1,258/49,623	2,292/90,416
Other international		0/0	0/0	0/0	0/0	212/8,354
Other national		0/0	86/3,405	265/10,454	265/10,454	177/6,968
Total		94,422/3,724,738	110,378/4,354,178	122,148/4,818,476	115,032/4,537,769	120,021/4,734,557

Table 3.3.2 - Contract research activities

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
OEZ s.r.o.	CZ49810146	2,755/108,677	3,432/135,365	4,132/162,995	3,486/137,532	2,511/99,053
Honeywell International s.r.o.	CZ27617793	745/29,392	3,610/142,422	494/19,500	4,927/194,371	1,295/51,091
EG.D, a.s.	CZ28085400	2,844/112,172	1,818/71,696	1,894/74,721	1,405/55,424	1,037/40,907
RUAG Schweiz AG	CHE-106.838.798	0/0	5,485/216,355	3,311/130,602	0/0	0/0
Ecne Trading, a.s.	24129704	0/0	0/0	0/0	6,646/262,162	0/0
SCHALTBAU GmbH	DE813090297	1,186/46,801	1,285/50,691	969/38,210	764/30,137	1,276/50,341
TOKOZ a.s.	CZ25670042	1,410/55,621	1,953/77,041	300/11,834	800/31,558	800/31,558
Eaton Industries GmbH	DE811135628	0/0	0/0	1,001/39,477	2,799/110,408	1,251/49,345
Inpraise systems s.r.o.	CZ06541747	0/0	0/0	0/0	0/0	5,024/198,179
ABB s.r.o.	CZ49682563	1,826/72,017	544/21,440	202/7,974	77/3,037	1,003/39,554

²⁸ If the client is from abroad, indicate in brackets the country of origin of the client.

Vitesco Technologies	CZ07574622	1,370/54,045	409/16,144	438/17,263	132/5,200	1,169/46,108
ZPA Smart Energy a.s.	CZ27445976	0/0	0/0	1,245/49,112	1,270/50,086	975/38,448
Eaton Elektrotechnika s.r.o.	CZ49811894	186/7,337	359/14,167	552/21,755	575/22,663	1,392/54,911
Ministerie van Binnenlandse Zaken	NL003214345B21	0/0	0/0	241/9,493	0/0	1,954/77,096
ČEZ Distribuce, a. s.	CZ24729035	916/36,134	122/4,813	585/23,077	0/0	457/18,028
MARF s.r.o.	CZ28587669	2,000/78,895	0/0	0/0	0/0	0/0
SCG Czech Design Center, s.r.o.	CZ25739336	0/0	400/15,770	550/21,689	438/17,278	541/21,341
innogy Energie, s.r.o.	CZ49903209	1,764/69,586	0/0	0/0	0/0	0/0
SALTEK s.r.o.	CZ62741471	130/5,128	130/5,128	341/13,448	330/13,018	796/31,400
Techna International Ltd.	GB222410129	301/11,866	629/24,802	122/4,822	490/19,333	155/6,131
GOMSPACE A/S	DK30899849	1,030/40,637	643/25,364	0/0	0/0	0/0
Honeywell, spol. s r.o.	CZ18627757	1,592/62,803	0/0	0/0	0/0	0/0
HLAVNÍ MĚSTO PRAHA	CZ00064581	0/0	490/19,329	980/38,659	0/0	0/0
SAKO Brno, a.s.	CZ60713470	0/0	0/0	1,359/53,609	0/0	0/0
GE grid Solution SAS-ARC	FR89389191800	0/0	655/25,838	655/25,828	0/0	0/0
Philips, Computed Tomography	NL009076840B01	515/20,307	525/20,707	52/2,032	86/3,412	122/4,822
Správa železnic, státní organizace	CZ70994234	0/0	0/0	0/0	0/0	1,290/50,888
České sdružení regulovaných elektroenergetických společností	62940520	313/12,331	296/11,693	0/0	0/0	619/24,418
Continental Automotive Czech Republic	CZ62024922	1,145/45,154	0/0	0/0	0/0	0/0
CleverFarm, a.s.	CZ05215480	0/0	0/0	0/0	0/0	1,129/44,548
AVL List GmbH	ATU28752908	108/4,266	518/20,433	402/15,849	85/3,363	0/0
BD SENSORS s.r.o.	CZ49968416	98/3,870	133/5,264	288/11,362	325/12,831	237/9,351
ŠKODA AUTO a.s.	CZ00177041	44/1,736	0/0	0/0	0/0	986/38,914
ČEZ, a. s.	CZ45274649	256/10,085	331/13,065	409/16,142	19/768	0/0
ApiCo s.r.o.	CZ29257042	0/0	0/0	0/0	499/19,684	499/19,684
A1 Telekom Austria	ATU62895905	0/0	559/22,061	433/17,064	0/0	0/0
Ing. Ivo Herman, CSc.	CZ6006141515	0/0	0/0	0/0	651/25,661	325/12,828
ČEPS, a. s.	CZ25702556	45/1,775	0/0	910/35,878	0/0	0/0
LTR s.r.o.	CZ28335325	0/0	408/16,110	0/0	0/0	536/21,124
Bundesamt für Sicherheit	DE811329482	0/0	0/0	0/0	0/0	938/37,006

SoftwareONE Czech Republic s.r.o.	CZ24207519	0/0	0/0	0/0	854/33,698	20/789
České vysoké učení technické	CZ68407700	13/513	613/24,197	0/0	74/2,907	136/5,381
Technické sítě Brno,	CZ25512285	0/0	0/0	50/1,972	0/0	764/30,130
Federal Institute of Metrology METAS	CH-000457-2	0/0	0/0	0/0	777/30,647	0/0
Volkswagen AG	DE115235681	767/30,266	0/0	0/0	0/0	0/0
Oil&Gas Metering Equipment s.r.o.	CZ07980841	0/0	0/0	0/0	650/25,641	100/3,945
SATTURN HOLEŠOV spol. s r.o.	CZ46900250	0/0	0/0	0/0	0/0	750/29,586
EVOTECH s.r.o.	CZ27748847	0/0	0/0	485/19,132	0/0	250/9,862
CAMEA, spol. s r.o.	CZ60746220	165/6,509	192/7,574	185/7,298	131/5,168	50/1,968
UJP PRAHA a.s.	CZ60193247	495/19,527	200/7,890	0/0	0/0	0/0
The University of Sheffield	GB648238808	0/0	0/0	0/0	0/0	626/24,688
S.A.B. Aerospace s.r.o.	CZ02588862	0/0	0/0	157/6,191	145/5,720	317/12,505
ČEZ Energetické služby, s.r.o.	CZ27804721	0/0	0/0	0/0	0/0	605/23,884
The European Space Agency	No VAT	0/0	0/0	0/0	0/0	593/23,376
Mendelova univerzita v Brně	CZ62156489	252/9,954	247/9,754	0/0	79/3,116	0/0
Měřicí technika Morava s.r.o.	CZ29316715	248/9,780	0/0	0/0	0/0	330/13,018
ENVISpot a.s.	CZ28472195	307/12,116	100/3,950	80/3,156	0/0	80/3,156
První brněnská strojírna	CZ00176109	0/0	0/0	0/0	0/0	536/21,144
Korea Electrotechnology Research Institute (KERI)	0000000122315220	0/0	352/13,901	0/0	177/6,968	0/0
Brookhaven National Laboratory	11-3403915	0/0	0/0	151/5,953	0/0	378/14,915
Theion GmbH	DE335866924	0/0	0/0	517/20,404	0/0	0/0
AI Telekom Austria AG	ATU40198200	255/10,063	258/10,180	0/0	0/0	0/0
The University of Liverpool	GB673598875	509/20,098	0/0	0/0	0/0	0/0
Envilope s.r.o.	CZ08401811	0/0	0/0	0/0	0/0	500/19,724
Riddia s.r.o.	CZ28828453	0/0	0/0	0/0	0/0	500/19,723
Delogy Projects s.r.o.	CZ07491531	0/0	0/0	0/0	270/10,651	225/8,876
ARIA PURA s.r.o.	CZ25598651	0/0	0/0	0/0	490/19,329	0/0
COMPAREX CZ s.r.o.	CZ63077124	0/0	486/19,172	0/0	0/0	0/0
MOBILBOARD s.r.o.	CZ26976056	0/0	0/0	485/19,132	0/0	0/0

ŠKODA AUTO VOLKSWAGEN INDIA	27AACCV4229P1ZT	0/0	0/0	0/0	0/0	481/18,956
DFC Design, s.r.o.	CZ27688097	0/0	0/0	0/0	480/18,935	0/0
Ing. Martin Smutný	CZ7708204867	0/0	0/0	0/0	477/18,817	0/0
TES s.r.o.	CZ45477973	0/0	393/15,503	0/0	84/3,314	0/0
E S L, a.s.	CZ63473780	0/0	0/0	0/0	0/0	477/18,797
KORBIČKA ŠPERKY s.r.o.	CZ05450829	0/0	0/0	475/18,738	0/0	0/0
EGGO Space s.r.o.	CZ28813880	377/14,889	0/0	10/387	4/154	82/3,250
ESB Rozvaděče, a.s.	CZ27749690	0/0	0/0	125/4,931	0/0	342/13,491
OSRAM Česká republika s.r.o.	CZ25863321	453/17,870	0/0	0/0	0/0	0/0
HŽP a.s.	CZ26955342	301/11,872	0/0	0/0	141/5,556	0/0
SENSATA TECHNOLOGIES HOLLAND B.V.	NL815352864B01	0/0	0/0	72/2,853	350/13,806	0/0
Astotec Automotive GmbH	ATU76797138	0/0	0/0	0/0	314/12,373	104/4,096
Rifetech s.r.o.	CZ05056896	0/0	413/16,276	0/0	0/0	0/0
NBB Bohemia s. r. o.	CZ25016261	0/0	0/0	412/16,240	0/0	0/0
RUAG Space GmbH	ATU15988304	0/0	0/0	0/0	410/16,155	0/0
EXX s.r.o.	CZ63984261	309/12,201	0/0	50/1,972	0/0	50/1,972
UCL Finance and Business Affairs	GB524371168	0/0	0/0	408/16,095	0/0	0/0
Vysoká škola báňská	CZ61989100	0/0	0/0	264/10,414	125/4,913	18/710
BAS ELEKTRA BRNO, spol. s r.o.	CZ45478082	0/0	406/16,016	0/0	0/0	0/0
Jitřenka Bučovice z.s.	CZ26676613	0/0	0/0	200/7,890	200/7,890	0/0
Faster CZ spol. s r.o.	CZ60722266	0/0	0/0	400/15,779	0/0	0/0
EKOCEM - PPÚ s.r.o.	CZ49449630	399/15,720	0/0	0/0	0/0	0/0
Pow-en a. s.	SK2022502394	0/0	0/0	0/0	395/15,596	0/0
Hana Drimlová	CZ5960110618	395/15,582	0/0	0/0	0/0	0/0
ITS Praha, spol. s r.o.	CZ43001408	395/15,582	0/0	0/0	0/0	0/0
MEgA -	CZ25567110	21/828	44/1,717	62/2,434	97/3,845	167/6,578
HAKEI spol. s r.o.	CZ62028006	100/3,945	0/0	106/4,191	65/2,564	110/4,339
Robert Bosch, spol. s r.o.	CZ46678735	112/4,398	35/1,365	51/2,023	25/978	150/5,911
DEKPROJEKT s.r.o.	CZ699000797	0/0	319/12,587	0/0	0/0	50/1,972
TESLUX Lighting s. r. o.	CZ29198992	0/0	319/12,587	0/0	0/0	50/1,972
ZVS IMPEX, a.s.	SK7120001405	0/0	0/0	0/0	351/13,829	0/0
D-Ex Limited, s.r.o.	CZ18827187	0/0	150/5,917	200/7,890	0/0	0/0
Aqist, a. s.	SK2024073678	348/13,728	0/0	0/0	0/0	0/0
GEMA s.r.o.	CZ47120584	0/0	0/0	340/13,410	0/0	0/0

APATOR METRA s.r.o.	CZ26834073	70/2,750	0/0	0/0	264/10,414	6/217
ROHDE & SCHWARZ	CZ26034441	338/13,333	0/0	0/0	0/0	0/0
MarketingPPC s.r.o.	CZ04911695	120/4,734	94/3,708	120/4,734	0/0	0/0
AVL Moravia s.r.o.	CZ64619842	0/0	71/2,789	71/2,788	91/3,607	91/3,571
Bluesoft s.r.o.	CZ29182689	0/0	0/0	320/12,633	0/0	0/0
Střední průmyslová škola Třebíč	CZ66610702	0/0	0/0	0/0	0/0	320/12,623
BARCO, s.r.o.	CZ47916991	50/1,972	0/0	0/0	129/5,089	134/5,274
ADUCID s.r.o.	CZ03678091	0/0	304/11,980	0/0	0/0	0/0
WSP UK LIMITED	GB905054942	0/0	0/0	303/11,953	0/0	0/0
SANELA spol. s r.o.	CZ25262955	300/11,834	0/0	0/0	0/0	0/0
GE Aviation Czech s.r.o.	CZ27928845	183/7,234	95/3,757	0/0	0/0	0/0
European Commission, joint Research Centre	949 383 342	256/10,102	0/0	0/0	0/0	0/0
NXP Semiconductors	CZ27116051	12/454	0/0	0/0	237/9,361	5/187
TSE spol. s r.o.	CZ15771946	0/0	0/0	0/0	250/9,862	0/0
ELVAC a.s.	CZ25833812	0/0	0/0	0/0	0/0	245/9,665
Ústav přístrojové techniky	CZ68081731	25/978	56/2,201	56/2,201	0/0	104/4,103
EGC-EnerGoConsult ČB s.r.o.	CZ25166972	0/0	0/0	0/0	0/0	240/9,467
VÚKV a.s.	CZ45274100	95/3,748	96/3,787	0/0	48/1,893	0/0
LUCIS, s.r.o.	CZ25570731	56/2,209	35/1,394	81/3,195	52/2,067	0/0
GasNet Služby, s.r.o.	CZ27935311	0/0	0/0	0/0	221/8,718	0/0
University of Applied Sciences of Eastern Switzerland	CHE-205.856.647	0/0	0/0	0/0	0/0	221/8,702
Baumüller Nürnberg GmbH	DE133506024	0/0	0/0	0/0	0/0	218/8,614
COMPREX s.r.o.	CZ08705003	0/0	0/0	0/0	0/0	215/8,462
Centrum výzkumu Řež s.r.o.	CZ26722445	0/0	0/0	0/0	135/5,325	75/2,959
Siemens, s.r.o.	CZ00268577	210/8,284	0/0	0/0	0/0	0/0
UTILITY, s.r.o.	CZ27739473	0/0	208/8,193	0/0	0/0	0/0
janom a.s.	SK2022676843	207/8,174	0/0	0/0	0/0	0/0
ERA Elektro Recycling Austria GmbH	ATU61752311	204/8,054	0/0	0/0	0/0	0/0
Kovohutě Příbram nástupnická, a.s.	CZ27118100	0/0	0/0	0/0	32/1,262	170/6,686
LESIKAR, a.s.	CZ26018748	0/0	198/7,814	0/0	0/0	0/0
Trane Technologies s.r.o.	CZ63989069	0/0	0/0	0/0	148/5,827	50/1,978
X_Siemens AG	DE129274202	0/0	196/7,748	0/0	0/0	0/0

Elektrorozvaděče, s.r.o.	CZ25393537	0/0	0/0	0/0	0/0	194/7,653
CIMTO, s.r.o.	CZ04050657	67/2,645	19/761	0/0	87/3,422	17/675
Applied Sunrise Technologies a.s.	CZ27664911	190/7,495	0/0	0/0	0/0	0/0
Veterinární univerzita Brno	CZ62157124	0/0	0/0	0/0	185/7,298	0/0
Masarykova univerzita	CZ00216224	8/326	165/6,509	0/0	0/0	0/0
LEVEL, s.r.o.	CZ47469374	0/0	0/0	0/0	171/6,755	0/0
AHLSTROM-MUNKSJOE ITALIA S.P.A	IT05201960019	0/0	170/6,706	0/0	0/0	0/0
PREdistribuce, a.s.	CZ27376516	135/5,325	0/0	33/1,302	0/0	0/0
ASES GROUP, s.r.o.	CZ07614870	0/0	0/0	0/0	77/3,037	88/3,471
MShield s.r.o.	CZ09201700	0/0	150/5,897	0/0	15/592	0/0
Institut pro testování a certifikaci, a.s.	CZ47910381	0/0	0/0	0/0	0/0	159/6,254
Voith Hydro s.r.o.	CZ26358026	0/0	0/0	0/0	0/0	156/6,150
OZM Research s.r.o.	CZ25278118	150/5,917	0/0	0/0	0/0	0/0
Radek Pechman	CZ6612311101	50/1,972	0/0	50/1,972	0/0	50/1,972
TŘINECKÉ ŽELEZÁRNY, a. s.	CZ699002812	150/5,917	0/0	0/0	0/0	0/0
TZ pro, s.r.o.	CZ03760588	0/0	0/0	0/0	75/2,959	75/2,959
E.ON Česká republika, s.r.o.	CZ25733591	0/0	149/5,870	0/0	0/0	0/0
EPRONA , a.s.	CZ45534357	0/0	147/5,799	0/0	0/0	0/0
Smurfit Kappa Czech s.r.o.	CZ25105582	51/2,008	89/3,498	0/0	0/0	7/264
SOLINTEG GmbH	DE352581030	0/0	0/0	0/0	0/0	141/5,562
Triarca A/S	DK40481672	0/0	141/5,560	0/0	0/0	0/0
ÚJV Řež, a. s.	CZ46356088	0/0	140/5,523	0/0	0/0	0/0
Schrack Technik spol. s r.o.	CZ15039137	0/0	0/0	0/0	0/0	132/5,207
ERA a.s.	CZ60916427	61/2,400	0/0	30/1,175	16/649	25/966
Actinet Informační systémy s.r.o.	CZ25552635	130/5,146	0/0	0/0	0/0	0/0
AHLSTROM MUNKSJO SPECIALTIES	FR53352703201	130/5,128	0/0	0/0	0/0	0/0
TE Connectivity Czech s.r.o.	CZ48910791	0/0	110/4,339	7/284	13/493	0/0
Litostroj Engineering a.s.	CZ25305034	27/1,073	0/0	36/1,411	31/1,216	36/1,411
RACIO, s.r.o.	CZ46970860	0/0	124/4,892	0/0	0/0	0/0
KOVO, výrobní družstvo	CZ00030325	0/0	120/4,734	0/0	0/0	0/0

AV R&D, s.r.o.	CZ04799984	0/0	57/2,246	18/696	0/0	42/1,643
AEC a.s.	CZ26236176	0/0	115/4,548	0/0	0/0	0/0
I&C Energo a.s.	CZ49433431	0/0	0/0	30/1,183	32/1,247	51/2,020
TES VSETIN a.s.	CZ17529069	0/0	0/0	0/0	0/0	113/4,438
COMPEX, spol. s r.o.	CZ12164739	108/4,260	0/0	0/0	0/0	0/0
AmpluServis, a.s.	CZ65138317	12/471	8/314	52/2,060	26/1,028	8/314
JD Dvořák, s.r.o.	CZ49621815	0/0	0/0	56/2,226	34/1,337	14/559
TG Drives, s.r.o.	CZ60738821	102/4,036	0/0	0/0	0/0	0/0
GROUND.COM.SPACE s.r.o.	CZ09355090	0/0	0/0	0/0	101/3,980	0/0
ATAL s.r.o.	CZ47216719	100/3,945	0/0	0/0	0/0	0/0
ELTODO OSVĚTLENÍ, s.r.o.	CZ25751018	0/0	50/1,972	0/0	50/1,972	0/0
KAPPENBERGER + BRAUN	CZ16736907	0/0	100/3,945	0/0	0/0	0/0
Město Bystřice	CZ00294136	0/0	0/0	98/3,866	0/0	0/0
Touchless Biometric Systems s.r.o.	CZ29374995	0/0	0/0	0/0	0/0	96/3,787
UNIS, a.s.	CZ00532304	52/2,051	0/0	3/108	22/868	18/704
Welmeng, s.r.o.	CZ07540566	0/0	0/0	0/0	6/245	87/3,447
ACER VOLTAGE s.r.o.	CZ48150975	0/0	0/0	90/3,550	0/0	0/0
AWELIGHT s.r.o.	CZ04222148	90/3,550	0/0	0/0	0/0	0/0
Eissmann Automotive	DE214606095	90/3,550	0/0	0/0	0/0	0/0
SVS FEM s. r. o.	CZ15548180	84/3,329	0/0	0/0	0/0	0/0
INGOS s.r.o.	CZ64580903	0/0	83/3,274	0/0	0/0	0/0
Kistler Eastern Europe s.r.o.	CZ27861708	73/2,864	0/0	6/217	0/0	3/112
Ing. František Petrů	CZ5709011671	0/0	50/1,972	0/0	30/1,183	0/0
Mindfund Technologies Corp.	U72900KA2017PTC108487	0/0	0/0	0/0	0/0	80/3,156
PARNASA v.o.s.	CZ26379457	0/0	0/0	0/0	0/0	80/3,156
MACH SYSTEMS s.r.o.	CZ29413893	0/0	0/0	0/0	78/3,089	0/0
Innomotics, s.r.o.	CZ26230755	16/631	0/0	0/0	0/0	60/2,359
X_Nej.cz s.r.o.	CZ03213595	0/0	0/0	0/0	0/0	75/2,961
AŽD Praha s.r.o.	CZ48029483	30/1,183	0/0	26/1,026	0/0	18/710
KPB INTRA s.r.o.	CZ63479451	0/0	9/355	0/0	0/0	65/2,564
Technologická platforma	CZ72046449	74/2,919	0/0	0/0	0/0	0/0
Wittmann Technology GmbH	ATU14228003	42/1,637	3/118	29/1,163	0/0	0/0
Draka Kabely, s.r.o.	CZ61251071	73/2,893	0/0	0/0	0/0	0/0
Vision Solution Engineering s.r.o.	CZ04899024	0/0	0/0	73/2,886	0/0	0/0

Univerzita Karlova	CZ00216208	0/0	0/0	70/2,771	0/0	0/0
Technická univerzita v Košiciach	SK2020486710	0/0	70/2,770	0/0	0/0	0/0
Česká geologická služba	CZ00025798	0/0	0/0	66/2,611	0/0	0/0
ANECT a.s.	CZ25313029	0/0	64/2,525	0/0	0/0	0/0
SEZ Krompachy a.s.	SK2020035985	62/2,442	0/0	0/0	0/0	0/0
Mergon Czech s.r.o.	CZ26903466	10/394	0/0	50/1,972	0/0	0/0
EVC Group s.r.o.	CZ27720870	0/0	0/0	0/0	59/2,327	0/0
Stráský, Hustý a partneři s.r.o.	CZ18827527	19/749	0/0	0/0	0/0	39/1,524
SOLSOL s.r.o.	CZ29360391	0/0	58/2,268	0/0	0/0	0/0
Olife Corporation, a.s.	CZ29291780	57/2,249	0/0	0/0	0/0	0/0
Ústav fyziky materiálů AV ČR, v.v.i.	CZ68081723	0/0	0/0	57/2,241	0/0	0/0
Brose CZ spol. s r.o.	CZ61465704	0/0	0/0	0/0	57/2,233	0/0
OPTICONTROL, s.r.o.	CZ46342494	0/0	56/2,201	0/0	0/0	0/0
JULI Motorenwerk, s.r.o.	CZ47909765	0/0	37/1,478	18/719	0/0	0/0
VACUUMSCHMELZE, s.r.o.	SK2020268151	21/828	35/1,361	0/0	0/0	0/0
PROFESS, spol. s r.o.	CZ14704897	0/0	39/1,533	16/632	0/0	0/0
VZLU AEROSPACE, a.s.	CZ00010669	0/0	26/1,017	0/0	0/0	29/1,137
NBN Elektronik s.r.o.	CZ14501627	0/0	31/1,221	21/843	0/0	0/0
DRIBO, spol.s.r.o	CZ63477084	0/0	52/2,051	0/0	0/0	0/0
MARSTON-CZ s.r.o.	CZ26226642	0/0	51/2,012	0/0	0/0	0/0
Centrum dopravního výzkumu, v.v.i.	CZ44994575	0/0	0/0	0/0	50/1,972	0/0
EM Brno s.r.o.	CZ64507301	50/1,972	0/0	0/0	0/0	0/0
METROLUX s.r.o.	CZ07214634	50/1,972	0/0	0/0	0/0	0/0
RNDr. Karel Gebauer	CZ5808081499	0/0	0/0	50/1,972	0/0	0/0
DAKO Brno, spol. s r.o.	CZ63492792	50/1,972	0/0	0/0	0/0	0/0
Siemens AG	DE129274202	0/0	0/0	0/0	49/1,919	0/0
PRECHEZA a.s.	CZ26872307	0/0	0/0	0/0	48/1,893	0/0
Sparkinvest s.r.o.	CZ28326989	0/0	0/0	0/0	48/1,893	0/0
MORAVIA PROPAG, s.r.o.	CZ25504428	0/0	0/0	0/0	47/1,846	0/0
SAWtronics s.r.o.	CZ05082030	46/1,805	0/0	0/0	0/0	0/0
Semiconductor Components Industries Llc	36-4292817	45/1,790	0/0	0/0	0/0	0/0
Kollmorgen, s.r.o.	CZ15528910	0/0	0/0	45/1,783	0/0	0/0

D.A.L.I.-M.N., s.r.o.	SK2020217914	0/0	44/1,732	0/0	0/0	0/0
PO LIGHTING CZECH s.r.o.	CZ24304450	44/1,732	0/0	0/0	0/0	0/0
Ademco CZ s.r.o.	CZ06609805	0/0	0/0	42/1,676	0/0	0/0
BOCHEMIE a.s.	CZ29396824	0/0	0/0	0/0	0/0	35/1,381
ELEKTROKOV,a.s. ZNOJMO	CZ44026587	0/0	0/0	35/1,381	0/0	0/0
VISHAY ELECTRONIC spol. s r.o.	CZ40509044	35/1,381	0/0	0/0	0/0	0/0
DevCom, spol. s r.o.	CZ25787594	0/0	34/1,341	0/0	0/0	0/0
GOSPACE Tech s. r. o.	SK2023741489	0/0	0/0	33/1,299	0/0	0/0
Beta Control s.r.o.	CZ60696052	0/0	0/0	0/0	33/1,292	0/0
Robert Bosch GmbH	DE811128135	0/0	0/0	0/0	0/0	32/1,262
ABM INTRA s.r.o.	CZ29300975	0/0	0/0	0/0	0/0	32/1,262
SAFETY PRO s.r.o.	CZ28571690	0/0	0/0	0/0	32/1,247	0/0
Trezor Company s.r.o.	CZ02440032	0/0	0/0	0/0	0/0	31/1,235
SOLUTRON s.r.o.	CZ29183308	31/1,231	0/0	0/0	0/0	0/0
Ústav súdneho inžinierstva	SK2023647813	0/0	0/0	0/0	30/1,183	0/0
DSSI International,	SK4020446518	0/0	0/0	0/0	0/0	29/1,135
MAG 45 s.r.o.	CZ27697690	0/0	0/0	27/1,077	0/0	0/0
PROTOTYPA a.s.	CZ60698250	27/1,053	0/0	0/0	0/0	0/0
SKILLIn M&P, s.r.o.	CZ05736731	26/1,026	0/0	0/0	0/0	0/0
Other contracts		261/10,302	248/9,767	171/6,762	262/10,324	263/10,389
Total		33,855/1,335,508	33,456/1,319,765	29,438/1,161,247	36,337/1,433,423	41,627/1,642,099

Note: List and describe contract research activities with a revenue in a given calendar year, regardless of the amount of financial revenue.

3.4 Research results with existing or prospective impact on society

The evaluated unit shall briefly comment on a maximum of 10 (considered most significant by the evaluated unit) research results already applied or realistically heading towards application during the period of 2019–2023, based on the overview annex table 3.4.1 (it is recommended to indicate results with a link to projects listed in indicator 3.3). The evaluated unit must demonstrate in its description that the research results have led or will soon lead to positive impacts²⁹, on society (e.g. description of how the results are used by various users, the range of persons/institutions for which the result is relevant, measurable economic impacts, etc.). The evaluated entity shall indicate in its commentary whether the gender dimension is considered in these results and discuss the impacts of the results regarding sustainability.

Maximum range 300 words/result.

Self-assessment:

During the evaluation period, the Faculty research teams, mainly in cooperation with partners from industry and academia, reached 385 applied research results (such as prototypes, functional samples, etc.) and 49 patents and utility models were registered. Assuming technical aspects of the reached results, they are basically gender neutral and all contribute to sustainability of the society by providing novel and innovative solutions for future or already current customers. Below, selected 10 results are described in more detail that already now show their existing impact on society.

Output name: [Atlas, the sensory framework for self driving cars](#)

Type of output: Functional sample

Year of application: 2019

Atlas is a measuring platform for sensing the surroundings of a passenger car and serves as a data source for research and development of artificial intelligence algorithms in the field of autonomous driving of road vehicles. It is a result of H2020 project [AutoDrive](#) as a subsystem for fully autonomous vehicles. Atlas significantly improves the general concept of sensing the surroundings of a vehicle in three directions and substantially contributes to the e-Mobility [Strategic Area](#). The first, an IR camera to detect vulnerable objects (such as pedestrians) under deteriorated light conditions is part of the system. The second improvement, which first nowadays becomes common for other solutions, is the utilization of RTK receiver of GPS, which allows localization with an accuracy of up to one centimeter and direct determination of the vehicle orientation without the need for estimation based on previous measurements. The third and the most important feature of Atlas is the hardware solution of synchronization of all sensors and the direct linking of the time stamps of individual measurements to the exact time of the GPS signal. This allows the use of the acquired data even with completely independent sources of other measurements, if they are also marked in the same way. This method of timing allows elimination of many problems of compensating for unequally accurate clock signal sources from different devices and estimating communication channel latency. Using Atlas, a [Brno-Urban dataset](#) was recorded and is free to use by the research community. Atlas platform was further developed and used in [ArchitectECA2030](#) project, where the Brno-Urban dataset was extended with data covering winter conditions, which allows its use for validation of automated driving systems in complex weather conditions.

The high social relevance of Atlas was proved by independent [H20 evaluation](#) made by the Research, Development and Innovation Council and was rated to be “excellent”.

²⁹ See Terms definition.

Output name: [Energetically-Compensated Monitor of Equivalent Dose Quantity of Neutrons](#)

Type of output: Functional sample

Year of application: 2019

This result was developed in cooperation between our Faculty, Masaryk University and VF a.s. company within applied research project [Digital spectrometer of mixed neutron and photon fields](#) (reg No. FV20453). The proposed energy-compensated neutron dose equivalent power monitor allows for the measurement of spatial dose equivalent power of gamma rays and neutrons with a single detector. Unique signal processing algorithms implemented in the spectrometer ensure reliable and precise measurement in mixed fields (gamma/neutron) environments.

The monitor meets the requirements for a high response rate and mechanical robustness. The developed device has been successfully tested in accredited laboratories and is already commercially offered by the VF a.s. company as the [SGN-02 probe](#). The prime feature and contribution of this R&D result is the fact that it is still the only device that enables detection of gamma ray and neutron particles at the same time and is commercially available. The probe is based on a scintillation detector with a 1x1 inch EJ-276J crystal. The signal from the detector is amplified by a photomultiplier, processed by a precision preamplifier and digitized by a fast AD converter. The signal from the ADC is then processed in an FPGA where algorithms for neutron/gamma particle classification proposed by our team are implemented. The implemented algorithms meet not only the requirement for high classification reliability, but also for high data processing speed (real-time detection) and reasonable computing power requirements. High precision in measuring of high-energy particles is a must for monitoring the performance of technologies being developed within the Nuclear Engineering [Strategic Area](#).

The high social relevance of this result was proved by independent [H2O evaluation](#) made by the Research, Development and Innovation Council. According to this evaluation, the R&D result is "excellent".

Output name: [Electro-mechanical actuators EMA1/EMA2](#)

Type of output: Functional sample

Year of application: 2022

The electro-mechanical actuators EMA1 ([Permanent magnet synchronous machine 155 to 255 Vrms for driving a linear electromechanical actuator](#)) / EMA2 ([Permanent magnet synchronous machine 343 to 637 Vrms for driving a linear electromechanical actuator](#)) are the results of a research project [Innovative linear electro-mechanical actuators](#) (ILEMA), reg. No. FW01010148 solved within a consortium of BUT, Honeywell International and ATAS Electromotors Náchod. By replacing traditional electro-hydrostatic actuators, they enable a 7% weight reduction per unit and total weight savings of up to 50 kg per aircraft. This reduction minimizes the reliance on hydraulic components and fluids, ultimately lowering fuel consumption and emissions while improving overall aircraft performance and sustainability. Hence, the contribution of the developed actuators to the e-Mobility [Strategic Area](#) is of extreme impact.

The developed actuators were subjected to further long-term testing according to implementation plans, focusing on verifying the endurance parameters of individual components (Endurance Tests). During these tests, the functional samples operated continuously for six months, accumulating a total of 500 operating hours. Between test phases, assessments were conducted to evaluate component wear, lubricant quality, and other critical parameters. The results were subsequently integrated into the customer-specific design of the delivered prototypes. The project outcomes have been further validated, and development continues in accordance with the implementation plan.

The achievements of the ILEMA project have laid the foundation for the Honeywell product development of electro-mechanical actuators tailored to meet specific customer requirements. Under a signed contract with Honeywell, 12 prototype actuators were delivered for the control of

surfaces on an aircraft in the CS-23 category. These prototypes were further refined and manufactured based on the validated functional samples from ILEMA project. They will be utilized for performance and functional testing directly by the customer to validate all parameters before proceeding with subsequent planned deliveries.

Output name: [System V-dip for unbalance fault localization](#)

Type of output: Pilot plant

Year of application: 2021

This result is the main deliverable of the project [Development of the system for asymmetrical fault location V-dip](#) (reg. No. TK01020107), solved in consortium of [ELVAC a.s.](#) and [K M B systems, s.r.o.](#) companies together with the [Technical University of Liberec](#). Nowadays, it is commercially available by ELVAC for energy distribution companies as [Vdip system](#). The asymmetrical fault location Vdip system is a unique technology designed for automatic fault location in medium voltage (MV) distribution grids. These grids supply electricity to the suburbs and cities and are the most complex and extensive in terms of topology. It is in these grids, which are mostly operated as compensated systems and therefore have very low fault currents (typically up to 30 A), that the fault tracing is very problematic and time consuming. The long-lasting presence of the fault and its repeated flare-ups during its localization in the field significantly increase the risk of fatal injury due to the occurrence of step and contact voltages. The Vdip system enables automatic localization of these faults immediately after their occurrence, without the need to re-switch the line to the fault and prolong the fault current. This makes a significant contribution to reducing the probability of injury electrocution of persons, death of animals and high property damage (fire) due to fault current passage. FEEC researches are behind the idea and methods that resulted in the Vdip system, whereas BUT has the full ownership of intellectual property. The Vdip system contributes to Energy Storage and Nuclear Engineering [Strategic Areas](#) since it is a maintenance tool of energy grids that utilize both energy sources and energy storage blocks.

The features make the Vdip system of extreme social relevance which was also proved by independent [H22 evaluation](#) made by the Research, Development and Innovation Council and was rated to be “excellent”.

Output name: [Optical detector of moving objects](#)

Type of output: Functional sample

Year of application: 2020

The optical detector is a result of [A Starling Scaring System Using a Passive Optical Locator](#) (reg. No. TJ04000441) project. Although an applied research-oriented project, FEEC was the only investigator, whereas the purpose of this specific Technology Agency call was to support young researchers. We introduced novel approach to detect nonstationary objects in the scene using artificial intelligence driven methods. Part of the detector is also an acoustic actuator that is activated under specific circumstances. The optical detector was primarily designed to scare a swarm of starlings that fly close to vineyards to prevent losses of grapes being otherwise eaten by starlings. In this sense, the optical detector is of high economical relevance as it protects the grapes until they are harvested by winemakers. This approach of scaring a swarm is more efficient than air guns operated continuously as in this case the starlings get used to regularly generated noise. Differential image accumulation algorithm is applied for motion detection. The selectable parameters are brightness difference intensity, minimum number of pixels with motion, length and frequency of generation cumulative masks for the differencing method. The algorithm detects swarms with 91% accuracy and 78% sensitivity, even at distances of about 300 meters. Although this result was initially developed for bird monitoring, it contributes to the Cybersecurity [Strategic Area](#) since the system may also be used

to monitor any critical infrastructure and be the trigger for necessary action in case of breaching the restricted area.

The developed optical detector represents successful knowledge transfer deployed. Under a license, it was sold in 2024 to [Apro Software](#) company that supplies the commercial market with a product [Drones for bird' control](#). It also contributes to sustainability and economical savings through crop protection otherwise being damaged by pest birds. To prove the social relevance of this result, it undergoes independent H24 evaluation.

Output name: [Cyber-arena for research, testing and education in cyber-security area](#)

Type of output: Functional sample

Year of application: 2022

The cyber-arena is a result of a project [Cyber-arena for research, testing and education in cybersecurity](#) (reg. No. VI20192022132) funded by the Ministry of Interior and is commercially called [BUTCA](#) (Brno University of Technology Cyber Arena) and offered directly by our Faculty, serves to train professionals, educate students and raise awareness of digital security among the general public. The cyber-arena consists of a number of sub-parts, the main ones of which include the implemented virtualization core by using OpenStack and AWX, physical polygons emulating processes from the OT area, automated monitoring using tools such as Prometheus, ElasticSearch or Kibana, or automated evaluation of test subjects.

BUTCA is a response to a significant shortage of cybersecurity professionals and a very low level of awareness of digital hygiene among the general public. Therefore, BUTCA represents an outstanding result contributing fully to Cybersecurity [Strategic Area](#). BUTCA differs from traditional methods by using the so-called gamification of learning and a hands-on approach to acquire knowledge of cyber security events (including mitigation and defense experience) in a safe environment close to real-world conditions and is fully dynamic and adaptable to the needs of the user and the teacher. Already after two years, BUTCA platform has over 50 affiliated partners from more than 20 countries (such as USA, Germany, Norway, Finland, UK). More than 1300 participants were trained in cybersecurity using BUTCA and the economical yield already exceeds 260 kEUR. To prove the social relevance of this result, it undergoes independent H24 evaluation.

Output name: [RAy3-80 prototype](#)

Type of output: Prototype

Year of application: 2020

The RAY3-80 was developed in cooperation with [Racom](#) company; which is one of the market leaders in radio modems, cellular routers and microwave links; within a project [RAYX - Compact and Efficient XPIC Microwave Link](#) (reg. No. H02010602). RAY3 is compact, spectrally, energy and cost-effective device for high-speed wireless data transmission in 80 GHz band on point-to-point (PtP) links over distances of units to tens of kilometers under line-of-sight (LOS) conditions. Our research team has been involved in the development of techniques and circuits for robust data transmission in the 80 GHz band, as well as in the modelling and development of microwave circuits and overall mechanical design. This robust data transmission provides security in wireless communication systems and hence, contributes to Cybersecurity [Strategic Area](#). The development of RAY3-80 follows the ever-increasing requirements for higher data transmission rates. This can be fulfilled by moving to higher frequency bands, nowadays mainly the E band (70 GHz – 80 GHz) since the signal attenuation caused by absorption on molecules of oxygen (O₂) is not as significant as in 60 GHz band. Although higher transmission rates can be achieved, we were aware of limitations, such as lower resistance to atmospheric conditions (e.g. rain, fog) and the need for direct visibility between antennas due to limited signal penetration through obstacles. However, these limitations were overcome by the use of high gain antennas with optimal directivity, adaptive modulation, power

control and site survey techniques that were also part of the development activities within the project. As a result, RAY3-80 provides upto 10 Gb/s transmission rate at distance of 5 km. RAY3-80 is part of the product portfolio of [RAY – microwave link family](#).

The high social relevance of RAY3-80 was proved by independent [H23 evaluation](#) made by the Research, Development and Innovation Council and was rated to be “excellent”.

Output name: [Software for visualization](#)

Type of output: Software

Year of application: 2021

The developed software is a result of a project [New system for indoor 2D and 3D real time positioning for automation, visualization and control of work process using MEMS sensors and PDoA/AoA hybrid method](#) (reg. No. FV40371) solved together with [Sewio Networks](#) company dealing with real-time location systems (RTLS) for indoor location tracking such as manufacturing halls, warehouses, and distribution centers.

Following the idea of Industry 4.0. demands for automation of processes increases. The movement of commodities between processing and storage is usually provided via forklifts. In order to analyze and optimize forklift movements or improve safety, it is necessary to measure (locate) these movements. The Software for visualization enables the processing, analysis and visualization of data from localization tags, thereby providing a clear and efficient form of interpretation of localization data. In addition, it includes algorithms to increase the accuracy of localization. From the collected localization data, the software allows to build a behavioral model of the monitored objects (forklift, persons or material) and to optimize the given processes in manufacturing halls or warehouses with the aims to reduce the amount of work in progress, to reduce the needs for operating costs (optimization of storage area), to detect and eliminate collisions, to detect tracked objects in prohibited areas. Hence, the developed software does not serve just for visualization but provides complex analysis and planning in production.

The share of BUT on this result is 80% and through Sewio Networks it is offered to end customers as a service, which includes one-time or repeated expert analysis, evaluation of behavioral model and provides recommendations [to improve warehouse or production efficiency and safety](#). Hence, this result is an outstanding example of knowledge transfer to society.

The high social relevance of this result was also proved by independent [H23 evaluation](#) made by the Research, Development and Innovation Council and was rated as “excellent”.

Output name: [Sensitive fiber optic microphone](#)

Type of output: Functional sample

Year of application: 2021

The issue of cybersecurity is a very up-to-date topic, and information becomes crucial for strategic decision and control. In accordance with [TEMPEST](#), the US National Security Agency specification and NATO certification, that identifies possible security breach and countermeasures, we have developed a highly sensitive fiber optic microphone that is optimized to detect very low-level acoustic signals and can be deployed in current fiber optic infrastructure in buildings. The system is designed to detect human speech, whereas the prime aim is to identify weak spots to prevent and eliminate eavesdropping and ensure security. Hence, this result is an outstanding contribution both to Cybersecurity [Strategic Area](#) of the Faculty and mainly the society.

This microphone was developed fully at our Faculty based on the request of [National Cyber and Information Security Agency](#). The system uses distributed measurement, hence the length of the measured fiber optic cable can reach up to tens of kilometers. The frequency range of the microphone is from 2 Hz to 20 kHz, and the operator software can be used to analyze the recording in both the time and frequency domain. Alternatively, the specially designed filters can be applied

to the signal. The fiber optic microphone is designed to work with both conventional single-mode and multimode telecommunication fibers. Optical interferometry with a C-band radiation source (the most common transmission band for data transmissions) is used for measurements, and the microphone allows a combination of multiple interferometer types. The system was sold to security units and forces of NATO, UK, Netherlands, France, Spain, and the Czech Republic.

The result is of high social relevance as it contributes to ensure security as one of priorities of any society. To prove the social relevance of this result, it undergoes independent H24 evaluation by the Research, Development and Innovation Council.

Output name: [DLMS Security Suite Data Generator](#)

Type of output: Software

Year of application: 2022

This result is a deliverable of the project [National Centre of Competence in Cybersecurity](#) (reg. No. TN01000077) that contributes to the strong demand for products and solutions to ensure cybersecurity of critical and non-critical information infrastructures. With no doubt, the research follows the Cybersecurity [Strategic Area](#) of the Faculty.

Under current legislation, by 2027 power energy distribution companies are required to install smart meters for their customers with annual consumption above 6 MWh. Smart meters can mainly disconnect the customer, control and regulate consumption or change the tariff in real time based on the electricity price on the market. The issue of protecting smart meters against cyberattacks is very closely linked to their practical deployment. DLMS Security Suite Data Generator is a software application designed for: i) cybersecurity testing of smart meters; ii) emulation of smart meters with DLMS communication and full security (Security Suite); iii) testing of higher-level systems; iv) assisted measurements at a given point of consumption for analysis of communication parameters and security of 5G-IoT technologies; and v) training and education in the field of cybersecurity in the energy sector. The developed Data generator serves for testing of real electricity meters from the point of view of DLMS compatibility and from the point of view of fulfilling safety requirements according to [Decree No. 359/2020](#), which follows the [EU regulation 2019/943 on Internal Market for Electricity](#).

The result is of high social relevance with worldwide impact, since we already tested smart meters for companies Sagemcom (France), Meter&Control (Serbia), Sanxing (China) or Landis+Gyr (Switzerland), ZPA Smart Energy (Czechia). The significance of testing the security of smart meters was also recognized by independent evaluation by a committee awarding the DLMS Security Suite Data Generator, commercially called "Smartbox", with [Golden Amper 2024 award](#). To prove the social relevance of this result, it undergoes independent H24 evaluation by the Research, Development and Innovation Council.

Table 3.4.1 - Overview of research results in the period under evaluation

Type of result ³⁰	Year of application	Name
Functional sample	2019	Atlas, the sensory framework for self driving cars
Functional sample	2019	Energetically-Compensated Monitor of Equivalent Dose Quantity of Neutrons
Functional sample	2022	Permanent magnet synchronous machine 155 to 255 Vrms for driving a linear electromechanical actuator
Pilot plant	2021	System V-dip for unbalance fault localization
Functional sample	2020	Optical detector of moving objects

³⁰ Specify the specific type of result. Add rows as needed.

Functional sample	2022	Cyber-arena for research, testing and education in cyber-security area
Prototype	2020	RAy3-80 prototype
Software	2021	Software for visualization
Functional sample	2021	Sensitive fiber optic microphone
Software	2022	DLMS Security Suite Data Generator

Note 1: Please list and describe the results already applied in practice or heading towards application in practice with existing or prospective impact on the society (e.g. domestic or foreign patents, sold licenses, spin-offs, prototypes, varieties and breeds, methodologies, significant analyses, surveys, expert outputs for policymaking or other forms of non-publication outputs, etc.). Indirect results of research, development and creative activities with documented societal impact, e.g. expert activities, services to the public/government/scientific community, may also be reported.

TRANSFER OF RESULTS INTO PRACTICE

3.5 Transfer of results into practice

The evaluated unit shall briefly describe its system for transferring results into practice. It shall also indicate up to five of the most typical users of its results, whether in the university environment or in the non-university application/corporate sphere, detailing how it collaborates with them and how it seeks out new users (using a maximum of five specific examples).

It will also indicate whether and how it commercialises R&D&I results (e.g. selling licences, setting up start-up or spin-off companies, etc.)³¹, providing brief description of the commercialisation methods used. The effectiveness of the transfer of results and the commercialisation of R&D&I results will be described using a selection of results (max. five) listed in annex table (Table 3.4.1).³²

Additionally, the evaluated unit shall briefly comment on the funds received during the period of 2019–2023 from non-public, non-grant sources (e.g. licences sold, spin-off revenues, donations, etc.). A full summary shall be provided in annex table (Table 3.5.1).

Maximum 500 words plus 200 words for each provided example of finding a new user of results and commercialization.

Self-assessment:

The principles and mechanisms of knowledge transfer is set up centrally from the University level through the [Dept. of Knowledge Transfer](#) (DKT) and is governed according to the guidelines and decisions issued by this dept. The DKT primarily has experts in intellectual property protection and related legal aspects. At faculty level the knowledge transfer is governed by the Dean, Vice-dean for R&D – Knowledge Transfer Manager (KTM), and faculty Chief Financial Officer. With the support of the Faculty [Dept. Of Science and International Relations](#) the KTM works closely with the DKT and manages the R&D results at the faculty level and coordinates the inventors in reporting their results subject to protection.

To better identify the potential of researchers and their innovations, the Faculty cooperates with the [South Moravian Innovation Centre](#) and their experts-scouts, with [Milan Simek](#) in front, founder and CEO of [Sewio Networks](#), and also the member of [Industry Council BUT](#). Together we consult the optimal forms of transferring our R&D results and know-how to private sector, either by joint project cooperation, licensing, or through establishing start-up/spin-off company and get access to venture capital. To support the knowledge transfer and make the private sector aware of our R&D

³¹ In the case of military HEIs, their specific position is taken into account when evaluating the commercialisation/evaluation of R&D&I results.

³² If the commercialisation of R&D&I results is carried out in this way.

achievements, the Faculty organizes a [perFEKT Business Day](#). Here, representatives of companies are invited to discuss and initiate new cooperation at different levels.

Table 3.5.1 summarizes the revenues from non-public sources, excluding Contract research. Compared to the previous evaluation period (i.e. 2014-2018), the total revenues have increased by 34%, from 323.6 kEUR to 434.6 kEUR. The structure has changed significantly, as now the majority (almost 36%) of the income stems from courses for private sector. The share of revenues from licenses is about 12% of the total income. This represents an increase of 400% compared to the previous evaluation period, where the revenues from licenses had a share of only 4% of the total revenues. In absolute numbers the revenues just from licenses increased from 12.9 kEUR to 53.5 kEUR. Here, it must be pointed out that the prime aim of the University and the Faculty is not to maximize the yield from knowledge transfer in terms of the university/faculty financial income. The prime aim is to transfer the knowledge and know-how to society via joint research activities and potentially via supporting the establishment of start-up and spin-off companies.

Similarly, as in gaining recognition by the research community (see Section 3.2), also the knowledge transfer takes place at different levels. From different scenarios of knowledge transfer the following are described in detail.

(i) Through joint research projects with industry partners, our know-how is being transferred into applied research products. The examples of such R&D results that already show their impact to wide society are listed above in Section 3.4. The Faculty currently has registered and protects 49 patents and utility models that stem from our own or collaborative research within the evaluation period. In vast majority, the R&D results were reached in cooperation with industry partners and in most cases are further used by same industry partners, whereas an Agreement on Utilization of Outcomes (AUO) was concluded. In these cases, and in accordance with high decentralization of the Faculty, the activity of commercialization and the knowledge transfer may be delegated to departments, where for individual cases a Knowledge Transfer Manager is appointed by the department head and the Dean's Guideline No. 1/2024 [The Support of Commercialization of Knowledge Transfer](#) is followed. The AUO includes articles that define the right and rules of using the University share on joint intellectual properties. The AUO also sets the royalties to be paid by the industry partner to University, whereas Vice-dean for R&D is invited for necessary negotiations.

(ii) Being focused on young and enthusiastic students and/or researchers, knowledge transfer is also reached via establishing Start-up and Spin-off companies. The Faculty is open to hosting such companies in its facilities, to provide the laboratory equipment, and to deliver other services. Based on the needs of individual companies a set of levels of cooperation were defined by the Faculty. If agreed, the payments for the services provided take the form of delayed instalments, after the company starts to make its own profit. Among the current Start-ups we mention [FlyinDiamonds s.r.o.](#) dealing with drone design, [Scicake s.r.o.](#) using artificial intelligence in data and signal processing, [2BSmart s.r.o.](#) focuses on custom electronic design, [OMG Robotics s.r.o.](#) promoting electrical engineering by supporting pupils through design kits, [Agiception s.r.o.](#) dealing with visual sensors in industry, [Penterep Security s.r.o.](#) focuses on penetration testing of communication networks, or [FT4U company s.r.o.](#) contributing to energy storage and electromobility with their product WATTEE. The interest in establishing own start-up or spin-off companies was boosted after issuing the [Guideline no. 8/2022 Establishing of spin-off and start-up companies at BUT](#) that introduced the possibility the start-up and spin-off companies to label as Start-up BUT and Spin-off BUT, respectively. Currently, [Scicake s.r.o.](#) and [FT4U company s.r.o.](#) are with the label Start-up BUT, and [LTR s.r.o.](#) is with the label Spin-off BUT.

(iii) Knowledge transfer also occurs through Contract research, where the input of the Faculty is its know-how that is used to deal with the specific tasks as defined within the contract with a company.

The income from Contract research is summarized above in Table 3.3.2, with the annual yield over 1000 EUR. The companies are listed according to the total sum of yield for the Faculty, whereas from the most significant partners we cooperate regularly with [OEZ, s.r.o.](#) producing low-voltage breaking devices, [Honeywell International, s.r.o.](#), power distribution company [EG.D, a.s.](#), air/space/defense company [RUAG Schweitz AG](#), or [Schaltbau, GmbH](#) being focused on sustainability in energy, and e-Mobility. Next to the knowledge transfer and the revenues from the Contract research, additional measures have been created to take another advantage from Contract research (see Section 3.7 below).

(iv) Further education of company employees from the private sector also represents a significant tool in knowledge transfer. Here, we may mention the education platform [BUTCA](#) (Brno University of Technology Cyber Arena) that was introduced in 2022. Developing this platform, we deal with the lack of staff qualified in cybersecurity. Since being introduced, over 1300 persons have already been trained in cybersecurity already. Assuming the costs for such a course, the revenues would be over 260 kEUR. However, based on mutual cooperation agreements, BUTCA is also used in education of current university students from [Tampere University](#) (Finland), [Pennsylvania State University](#) (USA), or the [University of Defense](#) (Czech Republic). Hence, for training individuals from the private sector the revenues are about 20% only. However, the benefits in training students that later become part of the labor market must be accounted as well.

(v) A successful knowledge transfer of a result that 100% stems from R&D activities at the Faculty to industry is demonstrated on the [Optical detector of moving objects](#), already described in Section 3.4 above. This R&D result is a real example of applying AI algorithms in practice and is currently used under license by [Apro Software s.r.o.](#) company. Together with the Faculty KTM and University legal department, joint discussions started in 2023 to deal about and agree on the rights of using the intellectual properties and also the revenues. After several meetings, the contract was concluded in 2024, whereas an exclusive license was provided for 11.8 kEUR (300 kCZK excl. VAT). The contract also specifies the conditions for additional income of 15.8 kEUR (400 kCZK excl. VAT) being paid for the transfer of rights to the subject of the license and technical assistance in developing a next generation product. Currently, the Optical detector of moving objects is being offered to private sector by the company under the label "[Drones for birds' control](#)".

Table 3.5.1 - Summary of non-public revenues received during the period under evaluation

Type of revenue	Revenue (in thousands CZK/EUR)				
	2019	2020	2021	2022	2023
Licences sold	372/14,655	752/29,662	90/3,550	100/3,932	43/1,677
Spin-off companies	0/0	0/0	0/0	0/0	10/394
Start-up companies	0/0	0/0	0/0	0/0	10/394
Paid training courses for employees of application-sector entities	1,008/39,760	868/34,255	907/35,794	560/22,103	591/23,309
Consulting and advisory services	0/0	122/4,813	6/245	0/0	0/0
Expert opinions and assessments	686/27,067	62/2,426	411/16,222	163/6,436	362/14,292
Donations	1,007/39,738	608/23,988	806/31,775	766/30,199	707/27,893
Total	3,073/12,221	2,412/95,144	2,220/87,586	1,589/62,670	1,723/67,960

Note: Enter funds raised for R&D&I from non-public sources besides grants or contract research (e.g. licences sold, spin-off company revenues, donations, etc.) in the calendar year.

POPULARIZATION OF R&D&I

3.6 The most important activities in the field of popularization of R&D&I and communication with the public

The evaluated unit shall briefly describe its main activities related to the popularisation of R&D&I and communication with the public (e.g. popularisation lectures, citizen science initiatives, etc.) during the period of 2019–2023 and provide up to 10 examples that it considers the most significant.

Maximum 500 words plus 200 words for each example given.

Self-assessment:

The Faculty focuses significantly on raising awareness of broad society about science and technology achievements. The Faculty and its scientific staff regularly communicate R&D results and technology areas being developed to show their benefits that can be used in our daily life and make it more convenient, also with respect to sustainability. The continuously updated online social media communication channels ([Facebook](#), [X](#), [Instagram](#), [YouTube](#), [LinkedIn](#)) attract tens of thousands of visitors annually. We reach the general society and communicate our activities also using press releases that are adopted by print/radio/TV media. Also based on these, our research staff is being invited to TV shows to communicate the impact of technologies to society and environment., e.g. [Tomas Kazda speaks about renewable energy sources](#).

Besides inviting scientists from universities and research institutions abroad to give their invited talks mainly in front of our students and academic staff, we also organize open workshops and discussion events intended for broad society. We may mention Dana Drábová, the chair of the [State Office for Nuclear Safety](#), who in [2019](#) and [2022](#) was discussing electrical energy needs of the society. Other topics being communicated within such wide public events were dealing e.g. with the future of aircraft technologies ([More electric aircraft](#)), security ([AI potential for the security](#)), or renewable energy sources ([FEEC photovoltaic polygon](#)).

Next to the above-mentioned events, from those being focused to wide society we list in more detail:

Researchers' Night

A nationwide annually co-organized event since 2015. For one evening it promotes science and technology to the general public. Visitors pass through laboratories and lecture halls of the Faculty, experience on-site experiments and learn about the most recent topics in depth. The Faculty prepares a diverse program including interactive demonstrations, every year related to specific topic: [Going Gentle on the Planet](#) (2019), [Humans and robots](#) (2020), [Time](#) (2021), [With all the senses](#) (2022), [Mystery](#) (2023). Every year, the Faculty welcomes over 900 visitors on this occasion, giving them the opportunity to explore research activities and technological innovations.

Maker Faire

Maker Faire is a festival of enthusiasts and professionals of all ages that invites participants of the same mindset. The aim is to popularize technology and encourage creativity as an alternative to the common and consumerist approach to life. At this event the presenters and visitors meet, share and widen their knowledge of technology and nature. This festival has been organized since 2020, whereas the Faculty as part of BUT is regularly presenting its activities done mainly by the Students Associations, such as [YSpace](#), [Drone Research Center](#), [TU Brno Raging](#) and [Brno Mars Rover](#). Annually, the festival addresses over 8000 visitors.

AMPER Trade Fair

AMPER is the largest international trade fair for electrical engineering and electronics in the Czech Republic and Slovakia. Our Faculty regularly participates at this event and presents the latest R&D results of the research done on our own or in cooperation with our industry partners to professionals and broad society. To boost our visibility and make visitors more aware of the technological trends, we are submitting the R&D results presented to Golden Amper competition, where they are usually successful: in 2019 we were awarded the [Golden Amper award](#) for [LumiDISP](#), the luminiscence distribution analyzer; in 2022 we were recognized by the committee with the Golden Amper award for the [HSR-01 soldering station](#); in 2023 we received an [honorable mention in the Golden Amper competition](#) for the BUT Cyber Arena.

BASTLfest in VIDA Center!

BASTLfest, organized by [VIDA! Science Center](#), is an event intended for enthusiasts who are always inventing, improving and constructing something, regardless of age. Our Faculty is regularly represented by [OK2KOJ radio club](#), where the visitors, under the supervision, may solder own electronic circuits and blocks, such as electronic dice. Annually, the BASTLfest welcomes over 1000 visitors, where more than 15% are actively involved in OK2KOJ exhibition at building own function blocks that they can take back home and have fun with them.

Technical challenges and visions for future mobility

The event is one of a number of lecture workshops being organized by our Faculty that are intended both for students, teachers, researchers and for general public. Having been organized since 2022, it addresses challenges in mobility such as charging, batteries, concepts of V2X communication, autonomous driving and many more. So far, 37 lectures have been held, focusing on technological solutions for transport today and in the near future from the perspective of selected experts and with the possibility of expert discussion on the topic.

Open Doors Day

One of the key activities in the area of public communication is the regularly organized Open Doors Day. This event is organized every year three times during November-February and primarily focuses on high-school pupils to present the activities of the Faculty and its study programs. However, the event is open for broad society, whereas the visitors have the opportunity to tour the laboratories, see advanced technologies, and meet experts from various fields of engineering and applied sciences.

Music from FEEC

With the beginning of the winter term, the Faculty hosts the [Music from FEEC](#) festival, that is organized by students from the Faculty's Students' Club. For 2023, it was already the 15th anniversary, and the festival is open to wide public for free. In addition to students' music bands performance, an accompanying program is ready for the visitors, such as the exhibition of [TU Brno Racing](#) student club, or a drone show by the [FlyinDiamonds](#), a start-up company of the Faculty. The visitors may also visit exhibitions of our partners, such as ABB, onsemi, or Thermo Fisher Scientific and take part in competitions and quizzes they organize. Annually, the Music from FEEC welcomes over 6000 visitors, students and Brno city inhabitants.

At the Faculty we also highly focus on young generation, elementary and high school pupils, to awaken and stimulate their interest in technology areas and intentionally make them university students in the near future. These events are not just about giving an insight in current and progressive engineering topics through lectures, but some also have the format of a competition.

VUT Junior

VUT Junior is a project of BUT aimed at pupils of elementary schools and junior high schools. Annually, we host over 50 participants. The aim of the project is to introduce selected pupils to the environment of BUT and its study facilities, modern technologies and the latest knowledge resulting from scientific activities at the faculties of BUT. Through the project, we positively develop the participants' interest in studying technical sciences. VUT Junior is a format of informal leisure education that for 10 Saturdays simulates some elements of studying at university and its faculties. The pupils have the chance to see some of the processes of studying at university - they participate in Welcome and Graduation ceremonies, and after graduation they receive a diploma of completion. The project activities are carried out at the faculties and units of BUT. At FEEC, the programme includes a visit to the fun science laboratory, the [Elektrikarium](#), where pupils tried out various interactive experiments, and lectures are given e.g. by the [YSpace](#) student group, which focused on the design of satellites. After these activities, the pupils are divided into five groups where they can choose a specific topic for hands-on experiments.

Summer schools for high school pupils

The Faculty regularly organizes summer schools targeting high school pupils. Such events represent a significant tool in popularization of science in technology-oriented areas. Participants of summer schools are highly motivated to gather or deepen their knowledge. We may mention the following [events](#) being organized by the Faculty departments:

- *Summer School of Biomedical Engineering*: Students were discovering the world of technology and medicine. They measured muscle activity, evaluated heart rhythms, disassembled a laboratory CT scan and used their own DNA to evaluate how we differ from dinosaurs.
- *Summer School of Sports Technology* is organized together with [Centre for Sports Activities of the BUT](#), where students had the opportunity to get an insight into the field of sports technology.
- *Nuclear Engineering Summer School* targets students interested in future development of nuclear energy through thematic lectures on practical and non-traditional nuclear topics, and excursions to participating institutes.

Competitions for elementary and high school pupils

The format of a competition immerses the participants very intensively in activities organized within the event. By solving real scientific problems participants working mostly in teams are even more motivated to take advantage of their experience and knowledge in technology fields in front of their colleagues. This fosters participants' creativity, critical thinking and supports their willingness to study further the technology-oriented areas. Every year, the Faculty organizes several competitions, to mention the most interesting:

- [Merkur perFEKT Challenge](#) Organized already since 2013, annually hosting over 50 teams - each of 4 members, dealing one of 9 technology challenges such as autonomous vehicle, wind power plant with energy accumulation, robotic arm, etc.
- [Microcontrollers are in!](#) (Mikrokontroléry letí in Czech) Organized already since 2009, annually hosting about 20 teams (max 5 members) that follow basically simple rule – design, construct and present a functional gadget with a microcontroller in it.
- [AT&T Hackaton Junior](#) is an event annually organized in Brno by AT&T company. Thanks to active cooperation between FEEC and AT&T, we are a partner of this event, and our researchers serve as mentors to 25 teams (each with 4-6 members) each dealing with the design and realization of its own project using advanced communication technologies.

IMPLEMENTATION OF RECOMMENDATIONS

3.7 Implementation of the recommendations in Module 3

The evaluated unit will briefly describe how it has implemented the recommendations for Module 3 from the previous evaluation period, if applicable.

Maximum 1000 words.

Self-assessment:

With the previous evaluation period (2014-2018), the lowest scoring (2 - Average) was related to the “strategy for setting up and support of spin-offs” or “other forms of commercialization of R&D&I results” (criterion 3.9). This criterion is tightly linked to the system and support of technology transfer and intellectual property protection scored as 3 – Good (criterion 3.8). Within the change in organization structure of BUT in 2021, the system of support of technology/knowledge transfer was moved from the university level to faculties, whereas administrative services for faculties are still present at university level. Since then, at the Faculty level we intensified the promotion of [Methodology for Evaluating Research Organisations and Research, Development and Innovation Purpose-tied Aid Programmes](#) (Methodology 17+) to make primarily PhD students but also all academic staff more aware about the importance of proper reporting of R&D results. This includes the support and discussion about the suitable format of intellectual property protection and the expected role of the originator of the R&D result in its future commercialization. While dealing applied research-oriented projects with our industry partners, more attention is now paid to content of the contractual relations that include a must Article on revenues from commercialization of the R&D results stemming from these projects. Linked to technology/knowledge transfer, measures were taken at FEEC to establish Start-ups/Spin-offs after BUT issued a [Guideline No. 8/2022](#). Thanks to this Guideline the newly established companies can ask for the label Start-up BUT or Spin-off BUT, which helps both the company and the Faculty in marketing communication with corresponding target groups. Additionally, the Faculty introduced a program supporting start-ups/spin-offs currently defining 7 levels of cooperation and services offered by the Faculty. The higher the level of support, the higher the Faculty’s share of the company’s future yields or from the yield after future exit of the company. So far, the label Start-up BUT has been granted to two companies raised from the Faculty: [Scicake s.r.o.](#) – dealing with custom development of products and serviced for diagnosis and therapy of dysarthria; and [FT4U company s.r.o.](#) – with its product WATTEE dealing with efficient charging of e-vehicles using renewable sources. The label Spin-off BUT goes to [LTR s.r.o.](#) company focused on custom construction of mobile robots and robot applications.

Constructive criticism was related to the revenues from non-public sources, which was scored as 3 – Good (criterion 3.4). To improve the relationships with industrial partners, in 2021 we launched the [perFEKT Partner](#) program. We defined several service packages that are offered to our industry partners, such as participation at events organized by the Faculty, promotion of the company, etc. We count already 11 the perFEKT Partners, among those [Rohde&Schwarz](#), [Honeywell](#), [EATON](#), [NXP](#), or [Thermo Fisher Scientific](#). Also by running this partnership program we increased the revenues from non-public sources, from 323.6 kEUR (for the previous evaluation period) to 434.6 kEUR (for the current evaluation period). An increased attention was also paid to our active involvement in providing courses to the private sector, which represents approx. 36% of total revenues. Through active promotion of the perFEKT Partner program, we continue to address companies, whereas after half-a-year discussion the [ABB s.r.o. is the most recent perFEKT Partner of FEEC](#). The communication with perFEKT Partners is tighter and makes them better and on-time aware about our R&D results compared to companies that we can address e.g. within [perFEKT Business Day](#).

As already pointed out during the evaluation of the previous period, in criterion 3.3 on Contract research, that was scored as 5 – Excellent, the Faculty also nowadays has strong ties with industrial partners. The revenues from Contract research for the current evaluation period are listed in Table 3.3.2, within Section 3.3 above. Since mainly cooperation with [OEZ, s.r.o.](#), [Honeywell International, s.r.o.](#), [EG.D, a.s.](#), [RUAG Schweitz AG](#), or [Schaltbau, GmbH](#) leads to the revenues for the Faculty that are comparable with (or even above) a common research project budget, the contracts concluded with companies newly include Articles that give us the right to jointly publish the reached results in journal papers and/or conference proceedings that are annually evaluated within the Module M2 “Research Performance”, or to nominate the R&D results for evaluation in Module 1 “Quality of Selected Results” of the [Methodology 17+](#). Such measures provide us the benefit in communicating our R&D activities and deliverables being applied in results/products used by our industry partners. Such measures result in win-win situations, as previously without these Articles being now included in contracts, the companies were not much aware of the possibility to advertise their activities and cooperation with academia through journal papers. Additionally, to avoid fragmentation of the R&D staff dealing with Contract research, there is a focus on reducing their absolute count as shown in Fig. 3.

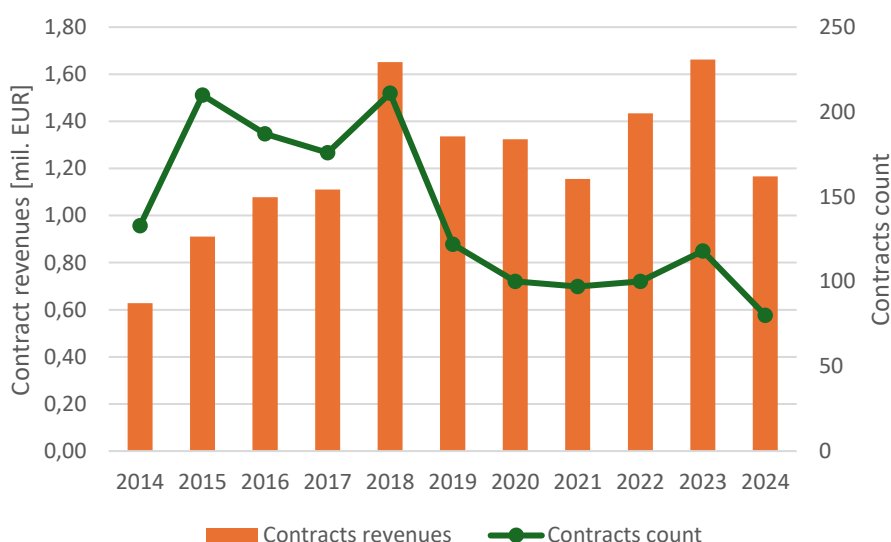


Figure 3. Revenues from Contract research vs. Contracts count

To reflect also other comments of the evaluation results and recommendations, the scientific staff becomes more active in acquiring external funding, mainly through current H2020 and HE calls. During 2019-2023, 39 project proposals within EU calls were submitted, out of 10 were funded. Compared to the period 2014-2018, this represents an increase of almost 40% in the number of submitted project proposals. The reason of increased participation in EU calls may be seen in increased communication of EU calls through the Project Support dept. but also thanks to the increased experience of the scientific staff being also active in building their contacts to other research institutions abroad. At the Faculty, the significant importance of building and maintaining the international collaboration becomes also communicated already to PhD students within the [TB²PC Series](#) (To Better Become Part of our Community) that covers also other topics such as the evaluation or R&D results, protection of intellectual property, etc. Based on the evaluation results for the previous period, the Faculty and its Marketing dept. become more active in promoting the information about the events through its English channels. A video inviting to [study at FEEC](#) was released in 2022. Other more recent English-speaking videos are the streams of invited lectures

given by our international colleagues, such as by [Assoc. Prof. Dr. Mario Hirz from TU Graz](#). We also take advantage of the [BUT YouTube channel](#), where our Faculty is mentioned.

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)

• SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED:

Faculty of Fine Arts, Brno University of Technology

FORD:6 - Humanities and the arts

SOCIAL CONTRIBUTION OF THE EVALUATED UNIT

3.1 Introductory information about the unit under evaluation

The evaluated unit will describe its mission and vision and provide a general self-reflection of the societal contribution of R&D&I, along with its long-term goals in the fields it develops. The distribution of research activities by type of research will also be commented on.¹ The evaluated unit will describe its organisational structure and size (staffing, number of students, number of study programmes implemented, etc.) based on the data provided in annex tables 3.1.1 to 3.1.6.

Maximum 1000 words.

This is a non-rated indicator that serves as an introduction to the evaluated unit, providing context for data in indicators 3.2-3.7.

Self-assessment:

Faculty of Fine Arts (FFA) Mission and Vision

FFA's core mission is education and research in the field of art and in the intersections between art and the humanities. Its success in fulfilling this mission is evidenced by the success of its graduates on the labour market, especially in the fields of visual arts and design, as well as audiovisual, cultural production, and education. In education, FFA emphasizes gender equality and imparts discipline-specific skills; it fosters critical thinking concerning current societal challenges and problems such as climate change, persistent class and racial inequalities. The same issues that FFA reflects in its curriculum also motivate the thematic focus of its research.

FFA's vision stems from a belief that education and culture contribute to building and maintaining a resilient society. Such a society can respond to current challenges in a way that involves broad democratic participation that does not exclude any individual social groups based on prejudice or stereotypes. The vision of FFA is linked to the social role of art and design, which are directly involved in shaping social dialogue.

Educational activities

The FFA provides education in art at all levels of higher education. Studio practice, which is at the core of the BA and MA study programmes' curriculum, is further cultivated by a wide range of art and design theory and history courses. In 2021–2023, FFA expanded the range of study programmes offered, introducing [the Fine Art and Design MA programme](#) taught in English and the BA and MA

programmes in Design. Currently, FFA offers six accredited study programmes with 387 students. The admission procedure is highly selective, with the long-term admission rate at the [BA level of about 10 %](#) and at the MA and [PhD levels at about 40 %](#) (Last year, FFA ranked as [the second most selective higher education institution](#) in the Czech Republic.). FFA's educational and research activities are carried out by 67 academic and 8 scientific staff members, further supported by 23 administrative /technical/economic employees.

Scientific and research activities

The themes that dominate the scientific and research activities correspond to the FFA BUT's vision. These include transition design, or [design for social change](#); generative design; AI, and automation of traditional media using digital tools or blockchain. Architecture, visual culture, and the cultural heritage of interwar modern art and socialist modernity are also of interest for FFA researchers, mainly in basic research. Many research projects undertaken at FFA, either in basic, artistic, or applied research, are determined by the researchers' civil engagement and strong personal motivation, which are inscribed in the projects' thematic focus and their methodologies.

In September 2023, a [Research Centre](#) was established with the intention of further supporting applied and basic research projects carried out at the FFA. It represents the Faculty in the new national initiative, the [Technology, Art, Humanities Creative and Innovation Centre](#). In order to further develop the creative (artistic, research or innovation-related) activities at the Faculty, the FFA opened a [Post-doc programme](#) for researchers in 2023.

Basic research is conducted by [the Department of Art History and Theory](#), which is one of the PhD training departments, as well as the [other departments](#) and [studios](#). In addition to the basic research in the disciplines of art, architecture, and design history/theory, FFA newly conducts research at the intersection of design, humanities, and social sciences (see 3.3). FFA actively seeks opportunities to perform **contract research**, resulting in collaborations with the [Masaryk Memorial Cancer Institute](#) and the National Heritage Institute.

Artistic research

Artistic research, i.e., the interdisciplinary research combining selected approaches from the humanities and social sciences with creative practices specific to contemporary (visual) art, plays a significant role in doctoral projects and the activities of the academic staff. In the results of the [international evaluation of research, creative activity, and Ph.D. studies](#), which BUT underwent on November 4–7, 2024, FFA received a grade of A2 (very good, above-standard international level). In the final evaluation report, the evaluators stated that the doctoral programme at the FFA BUT meets the international quality standards for structured PhD programmes (according to the Salzburg principles I+II for doctoral education, the Florence principles for doctorate in the arts), both within the field of arts- and design-based research and scholarly research in the SSH. [Doctoral research](#) produces a significant share of FFA's research output and considerably contributes to the [National Register of Artistic Outputs \(RUV\)](#).

Since its founding in 2016, FFA has been a key member of the Czech Association of Art Faculties. FFA is a long-standing member of the international organization [ELIA](#), a globally connected European network that provides a dynamic platform for exchange and development in higher arts education, representing more than 280 members in 54 countries across all art disciplines. In 2024, FFA joined forces with an international network of academic and independent institutions, the [Society for Artistic Research](#). Through SAR, FFA participates in the [Research Catalogue](#) platform, the largest

publicly accessible database for publishing art-research projects and contributes to open-access peer-reviewed journals hosted by the platform, such as the [Journal for Artistic Research \(JAR\)](#).

Social contribution

As an educational and research organisation, FFA co-creates a dialogue between art, design, architecture, technology, humanities and social sciences; it initiates and supports interdisciplinary research with the aim of supporting knowledge and innovation across disciplinary boundaries. By focusing its activities on pressing issues such as gender inequality, the climate crisis, digital extractivism, etc., FFA addresses societal challenges and articulates progressive public policies. At the level of content, its research and educational activities are determined by current societal challenges, while the methodologies and content of the teaching fulfil the faculty's profile in the field of arts education. FFA places emphasis on the transfer of knowledge by its staff and students, making the results of their research accessible to the public.

Ethical Environment, Social Safety, and Sustainable Development

In 2022 BUT became a signatory of the Agreement on Reforming Research Assessment, joining the [Coalition for Advancing Research Assessment \(CoARA\)](#). This commitment reflects FFA's focus on ensuring that evaluating scientific and artistic outputs prioritizes quality over quantity. By advocating for qualitative assessments through peer review, FFA aligns with global efforts to reshape the research assessment landscape, particularly by considering the diversity of research missions, disciplines, and the increasing importance of interdisciplinary approaches.

FFA has an above-average representation of women among students and staff, including Faculty leadership. [Dean's Directive No. 1/2022](#) (Social Safety) outlines the principles for fostering social safety at FFA. This effort is overseen by the faculty's [ombudsperson](#), whose mission is to create and ensure a safe and just study and work environment and promote its diversity. Additional support is available through the FFA [Labour Union](#) and [student-led initiatives](#).

Sustainability at FFA is supported by recycling and upcycling centre [Matter](#), which serves as a repository for reusable materials collected from studios and donated by partner companies and institutions. The student-led [Eco Unit](#) further encourages environmentally responsible and sustainable creative practices.

Table 3.1.1 – Staffing per FTE¹

Academic / Professional position FFA BUT –11	Total / Of which women					Total
	2019	2020	2021	2022	2023	
Professor	4,0/0	4,0/0	3,5/0	3,2/0	3,7/0,6	18,5/0,6
Associate Professor	10,5/1,8	10,7/1,7	11,4/2,0	12,4/2,0	12,7/1,4	57,8/8,9
Assistant Professor	8,4/3,8	8,5/3,7	9,0/4,2	10,0/5,0	13,1/6,4	49,0/23,1
Assistant	13,9/3,0	15,7/4,7	18,4/6,5	19,7/8,3	22,5/10,1	90,1/32,6
R&D Personnel ²	0/0	0/0	0/0	0/0	0/0	0/0

¹ The average number of hours worked is calculated as the ratio of the total number of hours actually worked during the reference period, from 1 January to 31 December, by all staff (including agreement on work activity, excluding agreement on work performance) to the total annual working time pool per full-time employee. The full-time status of the worker in the evaluated unit is always reported. If an employee holds more than one type of full-time job within the evaluated unit, the total sum of the two shall be reported.

² The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

Researchers in other categories ³	1,6/0,5	4,4/1,9	4,1/2,1	1,7/1,3	1,0/0,5	12,8/6,3
Technical and economic staff ⁴	23,3/14,9	23,8/16,1	23,0/17,1	22,4/15,4	23,3/15,2	115,8/78,7
Scientific, research and development staff involved in teaching activities	0/0	0/0	0/0	0/0	0/0	0/0
Early career researchers ⁵	0/0	0/0	0/0	0/0	0,2/0,2	0,2/0,2
Total ⁶	61,7/24,0	67,1/28,1	69,4/31,9	69,4/32,0	76,5/34,4	344,1/150,4

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

Table 3.1.2 – Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2019 (numbers of physical employees and personnel)⁷

Academic / Professional position FFA BUT	Under 29 years		30–39 years old		40–49 years old		50–59 years old		60–69 years old		70 years+	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	0	0	2	0	2	0	0	0
Associate Professor	0	0	0	0	8	0	3	1	0	0	0	0
Assistant Professor	0	0	6	2	4	2	0	0	1	1	0	0
Assistant	2	1	8	2	8	3	0	0	0	0	0	0
R&D Personnel ⁸	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ⁹	0	0	2	1	0	0	0	0	0	0	0	0
Technical and economic staff ¹⁰	0	0	4	2	5	3	11	9	1	0	2	1
Scientific, research and development staff involved in teaching activities	0	0	0	0	0	0	0	0	0	0	0	0
Early career researcher ¹¹	0	0	0	0	0	0	0	0	0	0	0	0
Total ¹²	2	1	20	7	25	8	16	10	4	1	2	1

³ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

⁴ Who participates in the management and support of R&D&I in the institution.

⁵ See Definition of Terms in Methodology HEI2025+.

⁶ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

⁷ The total number of employees/workers as of 31st December of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

⁸ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

⁹ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹⁰ Who participates in the management and support of R&D&I in the institution.

¹¹ See Definition of Terms in Methodology HEI2025+.

¹² Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I Personnel, Researchers in other categories and technical and economic staff.

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D Personnel, Researchers in other categories and Technical and economic staff are mutually exclusive, i.e. one staff member is reported in only one category. The categories of scientific, research and development staff involved in teaching activities and early career researchers are reported collectively for all the above-mentioned categories.

Table 3.1.3 – Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2023 (numbers of physical employees and personnel)¹³

Academic / Professional position FFA BUT	Under 29 years		30–39 years old		40–49 years old		50–59 years old		60–69 years old		70 years +	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	0	0	1	1	4	0	0	0
Associate Professor	0	0	0	0	8	1	5	0	0	0	0	0
Assistant Professor	0	0	2	1	12	6	3	2	0	0	1	1
Assistant	1	1	17	7	8	4	2	1	0	0	0	0
R&D Personnel ¹⁴	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁵	1	1	4	1	0	0	0	0	0	0	0	0
Technical and economic staff ¹⁶	2	1	7	3	9	5	8	6	3	2	0	0
Scientific, research and development staff involved in teaching activities	0	0	0	0	0	0	0	0	0	0	0	0
Early career researcher ¹⁷	0	0	1	1	0	0	0	0	0	0	0	0
Total ¹⁸	4	3	31	13	37	16	19	10	7	2	1	1

Note: Increased emphasis on greater representation of women among academic staff – [see FFA trends](#).

Table 3.1.4 – Students

	2019		2020		2021		2022		2023		Total	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Undergraduate	186	121	205	141	210	150	219	146	222	145	438	289
Master's ¹⁹	79	50	90	55	98	59	102	68	104	77	251	167
Doctoral	36	22	41	25	55	32	60	33	61	34	79	44
Lifelong Learning Courses	See "Summer Schools & Semester Courses for the Public" link											
Total	301	193	336	221	363	241	381	247	387	256	768	500

¹³ The total number of employees/workers as at 31.12. of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

¹⁴ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁵ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹⁶ Who participates in the management and support of R&D&I in the institution.

¹⁷ See Definition of Terms in Methodology HEI2025+.

¹⁸ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

¹⁹ All master's degree students are listed, regardless of the length of their programme of study.

Table 3.1.5 – Study programmes in Czech/English

Type of study programme	Total ²⁰ / Of which professional study programmes											
	2019		2020		2021		2022		2023		Total	
Undergraduate	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0
Master's	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0
Doctoral	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0
Lifelong Learning Courses	See "Summer Schools & Semester Courses for the Public" link											
Total	3 / 0	0 / 0	3 / 0	0 / 0	3 / 0	0 / 0	3 / 1	0 / 0	3 / 1	0 / 0	3 / 1	0 / 0

Note: For each SP type, enter the number of SPs in Czech language in the first cell and insert the number of SPs in English language after the slash in the same cell (e.g. 15/3), enter the number of professional SPs in Czech language in the second cell and insert the number of professional SPs in English language after the slash. Follow a similar procedure in the last column of the table (Total).

Table 3.1.6 – R&D&I capacities

R&D&I field	FORD	FORD share [%]	Predominant type of research	Total share of industry group [%]
1. Natural Sciences	1.1 Mathematics		Zvolte položku.	
	1.2 Computer and information sciences		Zvolte položku.	
	1.3 Physical sciences		Zvolte položku.	
	1.4 Chemical sciences		Zvolte položku.	
	1.5 Earth and related environmental sciences		Zvolte položku.	
	1.6 Biological sciences		Zvolte položku.	
	1.7 Other natural sciences		Zvolte položku.	
2. Engineering and Technology	2.1 Civil engineering		Zvolte položku.	
	2.2 Electrical engineering, electronic engineering, Information engineering		Zvolte položku.	
	2.3 Mechanical engineering		Zvolte položku.	
	2.4 Chemical engineering		Zvolte položku.	
	2.5 Materials engineering		Zvolte položku.	
	2.6 Medical engineering		Zvolte položku.	
	2.7 Environmental engineering		Zvolte položku.	
	2.8 Environmental biotechnology		Zvolte položku.	
	2.9 Industrial biotechnology		Zvolte položku.	
	2.10 Nanotechnology		Zvolte položku.	
	2.11 Other engineering and technologies		Zvolte položku.	
3. Medical and	3.1 Basic medicine		Zvolte položku.	

²⁰ The total number of study programmes for which admissions have been announced in a given academic year.

Health Sciences	3.2 Clinical medicine		Zvolte položku.	
	3.3 Health sciences		Zvolte položku.	
4. Agricultural and veterinary sciences	4.1 Agriculture, Forestry, and Fisheries		Zvolte položku.	
	4.2 Animal and Dairy science		Zvolte položku.	
	4.3 Veterinary science		Zvolte položku.	
	4.4 Other agricultural sciences		Zvolte položku.	
5. Social Sciences	5.1 Psychology and cognitive sciences		Zvolte položku.	
	5.2 Economics and Business		Zvolte položku.	
	5.3 Education		Zvolte položku.	
	5.4 Sociology	1,4 %	Balanced basic and applied research	
	5.5 Law		Zvolte položku.	
	5.6 Political science		Zvolte položku.	
	5.7 Social and economic geography		Zvolte položku.	
	5.8 Media and communications		Zvolte položku.	
	5.9 Other social sciences		Zvolte položku.	
6. Humanities and the Arts	6.1 History and Archaeology		Zvolte položku.	
	6.2 Languages and Literature		Zvolte položku.	
	6.3 Philosophy, Ethics and Religion		Zvolte položku.	
	6.4 Arts (arts, history of arts, performing arts, music)	93,6 %	Balanced basic and applied research	
	6.5 Other Humanities and the Arts	5,0 %	Balanced basic and applied research	
Total		100 %	–	100 %

RECOGNITION BY THE RESEARCH COMMUNITY

3.2 Recognition by the research community

The evaluated unit will briefly comment on its position in the research community. It shall consider individual and other prestigious R&D&I awards, participation of its academic staff in the editorial boards of international scientific journals, elected membership in professional societies, major invited lectures given by the evaluated unit's academic staff abroad or by foreign scientists and other relevant guests at the evaluated unit. Additionally, it will address the involvement of staff in the evaluation of national or European project/programme calls over the period of 2019–2023 based on the data provided in annex tables 3.2.1 to 3.2.5 (max. 10 most relevant items). If necessary, the evaluated unit shall list any additional services to the scientific community that it considers relevant.

Maximum 1000 words.

Self-assessment:

FFA has been performing excellently in evaluation of creative outputs. In the segments of fine art and design, it ranks as best nation-wide (as measured by [RUV](#), the [national system for evaluating artistic outputs](#)), and by the number of individual awards won by staff and students). Members of the academic community exhibit at prestigious institutions, receive commissions, succeed in competitions, their works are included in public and private art collections and become the subject of critical and scholarly review.

Prestigious design awards (presented by organisations such as [Czech Design Academy](#), [Red Dot](#) or [Design Cabinet](#)) were given to [Jan Vitek](#), [Mikuláš Macháček](#), [Jan Šrámek](#) and [Veronika Vlková](#) and Tereza Hejmová. Graphic designers from FFA BUT have achieved success at [The Most Beautiful Czech Books of the Year Award](#), with first-place prizes awarded to Tereza Bierská and Nela Klímová, Tereza Hejmová, and Petr Škobrtal in the fine art and schoolbooks categories in 2019, 2020, and 2022. In the field of fine art, the winners of the most important awards judged by international juries, such as the [Jindřich Chalupecký Award](#) (CJCH, the most important national prize established in 1990 by Václav Havel, Jiří Kolář and Theodor Pištěk, awarded annually to visual artists) and the [Oskár Čepan Award](#) (COČ, the most important national prize in the Slovak Republic), include [Michal Mitro](#), Valentýna Janů, Jakub Jansa, and [Andreas Gajdošík](#). Other recipients of awards and prizes from the professional public include [Pavla Nikitina](#) ([MUHi Award](#), prize for emerging Ukrainian artists) and Ladislav Jackson (the Jan Kotěra Award, given by the professional public in the field of architecture and history of architecture).

The extent of FFA employees' involvement in R&D&I is reflected in their memberships in editorial boards of magazines, as well as in professional societies (e.g. Ladislav Jackson is a member of the [International Committee of the Queer Educators in Architecture Network](#)) or their participation in guaranteeing processes and evaluation of science and research output quality. Václav Magid, Jakub Bulvas Stejskal and Jan Zálešák sit on the editorial board of the [Notebook for Art, Theory and Related Zones](#), included in the Scopus database, whose combined themed and open issues focus on contributions from art history as well as other related disciplines. Jan Zálešák and Markéta Žáčková sit on the editorial board of the [Bulletin of the Moravian Gallery in Brno](#), a peer-reviewed journal publishing articles primarily related to the collections, acquisitions and other activities of the Moravian Gallery in Brno.

In 2020–2023, FFA participated in the university-wide MeMoV II project, funded by the EU and aimed at promoting the international dimension of science and research. The goal of the project was to support basic research at post-doc, junior and senior levels. The junior programme supported Zuzana

Jakalová and Marianna Placáková's research into feminist press in the UK, and the USA and Canada, respectively. The post-doc positions supported Lenka Vráblíková and Lea Maria Spahn's research into the status of the artist and posthumanist production. Senior researcher Helena Čápková's research focused on the spiritual networks in early modern art.

The recognition of the high quality and relevance of research and artistic and creative activities at FFA is evidenced by the number of lectures given by FFA's academic staff and PhD students at foreign universities and major gallery institutions (see Table 3.2.3). Ladislav Jackson (whose research focused on the architect and engineer Jaroslav Josef Polívka) and Lenka Veselá (whose artistic research dealt with the effects of endocrine disruptors from the perspective of feminist posthumanism) have had presentations at conferences as well as invitations to lectures based on the international scientific community's response to their research. Both are also very active in terms of inviting international experts to the faculty or creating institutional partnerships. While abroad, Jana Kořínková presented the results of her research revising the art-historical knowledge of the work of Adolf Loos. As an equivalent to lecture by invitation, artist talks – lectures presenting the results of the work of our colleagues working in artistic creation or artistic research. Here, we can mention the lectures by [Adam Vačkář](#) at the Delfina Foundation in London (2021), [Julie Béna at the Fondation Pernod Ricard in Paris](#) (2022) or [Lenka Klodová](#) at MUMOK in Vienna (2022), among others.

As is the case with the academic community's participation in international events, scientific lectures, artist talks and presentations of curatorial projects play an equally important role when it comes to visiting experts, artists and scientists (see Table 3.2.4). In the period under evaluation, FFA emphasized the public accessibility of lectures and presentations by foreign guests. Between 2020 and 2022, the Department of Art History and Theory organised a series of publicly accessible online lectures titled [Katedra](#). FFA has also been organizing an ongoing cycle of presentations and discussions by foreign experts as part of the [Videogram](#) course (more than 50 lectures within the period under evaluation, e.g. by the Ruangrupa collective, the artistic directors of Documenta 15). Videogram is organised by the Department of Audiovisual Technology in cooperation with the Moravian Gallery in Brno and Masaryk University. It is open to the public as well as students. In 2023, FFA started utilizing the grant scheme of the Ministry of Culture of the Czech Republic (The National Recovery plan programme) for promoting art teaching by foreign experts. In addition to teaching modules, experts coming to FFA also delivered [public lectures](#). Its success in attracting guests such as [Maja & Reuben Fowkes](#), [Charles Esche](#), [Pekko Koskinen](#) or [Alexandra Pirici](#) is owed to the fact that they sit on the boards of the same professional journals, professional societies, juries of art prizes, etc, as mentioned above.

Members of FFA's academic community are involved in the evaluations of educational and research institutions, project applications and the creative results at national and international levels, including memberships in grant committees (Ministry of Culture of the Czech Republic, Fund for the Support of Arts of the Slovak Republic, Brno City Council) and in the RUV expert council or membership in the expert committees of national and international grant schemes (Norwegian grants). They also serve as reviewers of articles, books (e.g. Ladislav Jackson's review of Petr Svoboda (ed.), Renata Vrábelová, Martin Šolc, *Hotely, Architektura 20. století*, Brno: NPÚ 2021, or Jan Zálešák's review of Ondřej Navrátil, *Řečiště a vlna: České umění a environmentální problematika na počátku 21. století*, Brno: MU 2021) and R&D&I projects.

Table 3.2.1 – Prestigious R&D&I awards granted during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the award	Awarding institution
Ing. Jan Vítek	National Student Design Award 2023, winner	Design Cabinet Czech Republic
doc. MgA. Mikuláš Macháček	Red Dot Award Winner 2022, winner	Red Dot Design Award
MgA. Michal Mitro	Oskár Čepan Award 2022, winner	Foundation & Center for Contemporary Arts
MgA. Pavla Nikitina	MUHi 2021, winner	Shcherbenko Art Center
MgA. Jiří Žák	Audiovisual Essay Film Award 2021	University of Glasgow
MgA. Valentýna Janů MgA. Jakub Jansa MgA. Andreas Gajdošík	Jindřich Chaloupecký Award, laureates 2019 and 2021	Jindřich Chaloupecký Society
MgA. Martina Růžičková, Ph.D. MgA. Andreas Gajdošík	Josef Hlávka Award 2022 Josef Hlávka Award 2021	Josef, Maria and Zdenka Hlavka Foundation
MgA. Adéla Svobodová	Graphic Designer of the Year 2021, winner	Czech Grand Design, Czech Design Academy
doc. MgA. Jan Šrámek, Ph.D. MgA. Veronika Vlková	Illustrator of the Year 2021, winners	Czech Grand Design, Czech Design Academy
MgA. Tereza Bierská & MgA. Nela Klímová MgA. Tereza Hejmová MgA. Petr Škobrta	The Most Beautiful Czech Books of the Year 2022 ; first place, Ministry of Culture Award for a book on fine arts; The Most Beautiful Czech Books of the Year 2020 first place, Ministry of Culture Award for a book on fine arts; The Most Beautiful Czech Books of the Year 2019 , first place, Ministry of Culture Award for schoolbooks at all levels and other teaching aids	Ministry of Culture of the Czech Republic and the Museum of Czech Literature

Note: Provide up to 10 examples.

Table 3.2.2 – Participation of academic staff of the evaluated unit in editorial boards of international scientific journals during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of scientific journal, ISSN
Mgr. Helena Čapková, Ph.D., M.A., member of the editorial board	<i>Journal of Historical Sociology, Sociology Lens.</i> ISSN: 2832-5796. https://onlinelibrary.wiley.com/page/journal/2832580x/homepage/editorialboard.html
doc. Mgr. Václav Magid, member of the editorial board	<i>Notebook for Art, Theory and Related Zones.</i> ISSN: 1802-8918. https://vvp.avu.cz/en/redakcni-rada/
MgA. et Mgr. Alina Matějová, member of the executive editorial board	<i>Journal of Interactive Media (JOINME)</i> , https://joinme-muni.cz/about.php
Zeyno Pekünlü, Ph.D., M.A., editor	<i>Red Thread e-journal</i> , https://red-thread.org/
Mgr. Jakub Bulvas Stejskal, Ph.D., member of the editorial board	<i>Notebook for Art, Theory and Related Zones.</i> ISSN: 1802-8918. https://vvp.avu.cz/en/redakcni-rada/
Mgr. Jakub Bulvas Stejskal, Ph.D., member of the editorial board	<i>Umění/Art</i> , Institute of Art History, Czech Academy of Sciences, Prague, ISSN: 0049-5123. https://www.umeni-art.cz/cz/about-us/redakcni-rada-2Zl70R
PhDr. Kaliopi Chamonikolasová, Ph.D., member of the editorial board	<i>Umění/Art</i> , Institute of Art History, Czech Academy of Sciences, Prague, ISSN: 0049-5123. https://www.umeni-art.cz/cz/about-us/redakcni-rada-2Zl70R

doc. Mgr. Jan Zálešák, Ph.D., member of the editorial board	<i>Notebook for Art, Theory and Related Zones</i> . ISSN: 1802-8918. https://vvp.avu.cz/en/redakcni-rada/
doc. Mgr. Jan Zálešák, Ph.D., member of the editorial board	<i>Bulletin of the Moravian Gallery in Brno</i> . ISSN: 0231-5793. https://old.moravska-galerie.cz/moravska-galerie/o-galerii/bulletin-mg.aspx
Mgr. Markéta Žáčková, Ph.D., member of the editorial board	<i>Bulletin of the Moravian Gallery in Brno</i> . ISSN: 0231-5793. https://old.moravska-galerie.cz/moravska-galerie/o-galerii/bulletin-mg.aspx

Note: Please provide up to 10 examples of academic staff participation in editorial boards of international scientific journals (e.g. editor, editorial board member, etc.).

Table 3.2.3 – The most important invited lectures delivered by the academic staff of the evaluated unit at foreign institutions during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Invited lecture title	Name of host institution, or name of conference or event	Year
MgA. Jakub Jansa	Garden of Problems, Artist talk	Residency Unlimited, New York, USA	2023
MgA. Lenka Veselá, M.A., Ph.D.	Getting Sad with Environmental Chemicals, Lecture	University of Basel, CH	2023
prof. Mgr. A. Lenka Klodová, Ph.D.	Life and Death of the Czech Lion	Museum Quartier Wien, Austria	2023
Mgr. Zuzana Jakalová, Ph.D.	Multilogues on the Now: Artworks Between Object and Subject	University of Manchester, UK	2022
Julie Bena	Oral Texte, Artist talk, performance talk	Foundation Pernod Ricard, Paris, FR	2022
PhDr. Ladislav Jackson, Ph.D.	The "Raumplan" and has there been one after Adolf Loos?, Blacksbourg	Virginia, School of Architecture + Design, USA	2022
PhDr. Ladislav Jackson, Ph.D.	Presence/Absence: Constructing Queer Histories	University of Hawai'i at Mānoa, Honolulu, Hawai'i, USA	2021
Mgr. Jana Kořínková, Ph.D. & PhDr. Dagmar Černoušková	Past, present and future of Adolf Loos 's projects commissioned by the Hrušovany sugar refinery in Moravia	Bundesdenkmalamt Wien, Säulenstiege Hofburg, Vienna, Austria	2021
MgA. Adam Vačkář	Artist talk	Delfina Foundation, London, UK	2021
MgA. Lenka Veselá, M.A., Ph.D.	Addressing the Body, Gender and Social Justice Issues in Artistic Research	International Research Association of Institutions of Advanced Gender Studies (RINGS), Tallinn University, EST	2021

Note: Provide up to 10 examples.

Table 3.2.4 – The most important lectures by foreign scientists and other guests relevant to R&D&I at the evaluated unit during the evaluation period

Name, surname and title(s) of the lecturer	Lecturer's employer at the time of the lecture	Invited lecture title	Year
Alexandra Pirici	Academy of Fine Arts, Munich, DE	Artist talk	2023

Maja & Reuben Fowkes	University College London, UK	Beyond East-Eurocentrism: Multiple Worlds of the Socialist Anthropocene	2023
Charles Esche	Central Saint Martins, University of Arts, London, UK	The Demodernising Possibility	2022
Alma Leora Culén	University of Oslo, The Faculty of Mathematics and Natural Sciences, NO	Exploring Interactions with Self-made Digital Artefacts	2022
Pekko Koskinen	The Royal College of Art, Economic Space Agency (ECSA), FIN	Art of Designing Strange Economies: Playing Towards Post-capitalism	2022
Kate Davison	The University of Edinburgh, UK	Stimulating Emotions: The Visual Archive of Homosexual Aversion Therapy	2021
Paweł Leszkowicz	Uniwersytet im. Adama Mickiewicza w Poznaniu, PL	The Power and the Limits of Queer Art and Activism in Poland	2021
Peter Christensen	University of Rochester, US	The Blasphemy of Genius in Architectural History	2020
Carla Gurganus	New York University, New York, USA	Artist talk	2019
Keiko Sei	University of Media Art and Design in Karlsruhe (HfG), DE	Art, Activism and Media	2019

Note: Provide up to 10 examples. [Over 30 other prominent international guests – see FFA Videogram lecture series.](#)

Table 3.2.5 – Involvement in the evaluation of national/European research project/programme calls relevant to the R&D&I area at the unit during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the research project/programme call	Name of the contracting authority/guarantor of the project/programme	Year
PhDr. Ladislav Jackson, Ph.D., evaluator	Evaluation as part of the Collection of Quality Results (M1 M17+), Evaluator of results reported in the Collection of Quality Results, FORD 6.4 and FORD 6.5	Government of the Czech Republic – The Research, Development and Innovation Council	2023 – until now
doc. MgA. Filip Cenek, member of the committee	Permanent Committee on Evaluation Methodology	National Accreditation Bureau for Higher Education	2019 – until now
doc. MgA. Filip Cenek, chairman	Evaluation field: Fine Arts	Association of Art Faculties in the Czech Republic	2023 –until now
doc. MgA. Mikuláš Macháček, evaluator	Evaluation field: Fine Arts	National Accreditation Bureau for Higher Education	2019–2023

Mgr. Zuzana Jakalová, Ph.D., member of the committee	Program Visual Artists Residencies in New York	International Visegrad Fund	2022–2023
PhDr. Ladislav Jackson, Ph.D., society member	Architecture segment	Society of Architectural Historians, Harvard University, USA	2023 – until now
PhDr. Ladislav Jackson, Ph.D., executive board member	Queer Studies segment	International committee of the Queer Educators in Architecture Network	2019 – until now
doc. Mgr. Jan Zálešák, Ph.D., member of the committee	Evaluation field: Fine Arts	Jindřich Chalupecký Award	2020–2022
Mgr. Jakub Bulvas Stejskal, Ph.D., society member	Aesthetics and Fine Arts segment	European Society for Aesthetics, CH	2015 – until now
Mgr. Helena Čapková, Ph.D., M.A., member of the scientific board	Evaluation field: Fine Arts and Architecture	The Auguste Perret Foundation, FR	2017 – until now

Note: Provide up to 10 examples

RESEARCH PROJECTS

3.3 Research projects

The evaluated unit shall list at most 10 (considered most significant by the evaluated unit) research projects/activities (regardless of whether they are supported by public funds or based on contract research²¹) that it has implemented or participated in during the period of 2019–2023²². This should be done from the full list in annex tables (Table 3.3.1 – 3.3.2)²³, regarding particularly the results achieved or the application potential of the projects. The unit should also describe how the research projects contributed to the mission and purpose of the evaluated unit. If the evaluated unit has been a participant in listed project, it shall indicate which other entities were involved and describe its contribution to the project. The interdisciplinary aspects of the projects will also be commented on, along with any collaboration with other units of the evaluated HEI.

Maximum 300 words per project.

Self-assessment:

1)

Project name: Institute of Forensic Interdisciplinary Research, Design and Architecture for Social Emancipation

Provider: Technology Agency of the Czech Republic

Registration number: TL03000446

Project implementation: 1. 4. 2020 – 31. 3. 2022

Links: <https://starfos.tacr.cz/en/projekty/TL03000446?query=7o3yaadadrya;>

<https://www.vut.cz/en/rad/projects/detail/31482>

Abstract: The project aimed to create an institute combining interdisciplinary research with the design of social emancipatory methods, focusing on applied research and interventions for positive social change in the excluded locality of Veľký Krtíš. Led by Martina Růžicková, the interdisciplinary team included researchers from FFA, the faculties of Arts and Science of Masaryk University, a lawyer from the European Roma Rights Centre, and a social housing expert. The non-profit organisation IQ Roma Servis partnered on the project.

The designers worked within a broader interdisciplinary team with anthropologists, architects, a social geographer, a lawyer, and experts in social housing and social work. This project exemplifies the use of contemporary methodological approaches in design to facilitate social change. Through its activities, the team gradually uncovered the layers of the infrastructure of segregation that kept the inhabitants of the house in Veľký Krtíš in an excluded location. The intervention's intention was to defend the rights of the residents in communication with the city and later in court.

The most significant result was the involvement of a local NGO in the pilot call for affordable housing announced by Slovakia's Ministry of Labour and Social Affairs, which included Housing First elements. The team helped the local organization with the design of a new social service, preparing the project for the call, and connected it with the project partner, IQ Roma Servis, which has experience in implementing Housing First approaches, thereby expanding the local institutions' capacity to provide social services. [The outputs](#) of the project also include articles, a publication, a card game as a tool for local government representatives, and the syllabus of the course *Design as Critical Practice*. The

²¹ For the definition of contract research for the purposes of evaluation in the HE segments, see Article 2.2.1 of the Community Framework for State Aid for Research, Development and Innovation 2014/C 198/01.

²² Regardless of whether the projects are completed or still ongoing, provided that at least part of the project was implemented during the evaluation period.

²³ The evaluated unit shall only fill tables that are relevant to it.

project fulfils the mission and vision of the FFA by using design as a critical and emancipatory tool to address gender and social inequalities, actively contributing to social dialogue and transformation.

2)

Project name: Serious Educational Game about Roma Position in Society

Provider: Technology Agency of the Czech Republic

Registration number: TQ01000081

Project implementation: 1. 9.2023 – 31. 8. 2026

Links: <https://starfos.tacr.cz/en/projekty/TQ01000081?query=zktqaac75urg;>

<https://www.vut.cz/en/rad/projects/detail/34766;>

Abstract: The subject of this applied research project is to create a computer game as an educational tool for second-level primary school pupils, including the related methodology materials. The project communicates the issues of discrimination, social exclusion, and racial prejudice faced by Romani people. The materials for the development of the game come from an interdisciplinary team that includes the Roma, pupils, teachers, and parents and uses participatory, qualitative, and design research methods. This collaboration ensures the applicability of the game in the educational process as well as creates a communication space for authentic Roma expression. The project team consists of designers and game developers from FFA BUT, social scientists from the Faculty of Social Studies of the Masaryk University, and experts in information and communication technology implementation in pedagogy from the Institute for Research on Inclusive Education of the Masaryk University. The game uses advanced game mechanisms whose development is the subject of the project and will be provided by a team of game developers and designers from the Faculty of Education of the Masaryk University. The project challenges the currently prevailing use of sandbox games and text-based or point-and-click adventure games with a comprehensive approach to the game mechanics development and visual stylization, using up-to-date knowledge in the field of serious games, game rhetoric, and game studies in general. The game is tested, implemented, and disseminated in cooperation with a network of interested partners, including the Ministry of Education, Youths and Sports, the South Moravian Region, the Agency for Social Inclusion of the Ministry of Regional Development, the Občankáři association, and the Platform for Early Care. The project embodies the mission and vision of the faculty by applying interdisciplinary collaboration and artistic research to promote the interests of marginalized social groups, gender equality and inclusive education through innovative participatory methods and digital tools.

3)

Project name: Decentralized Collection, Analysis, Visualization and Interpretation of Large Data in an Artistic Practice

Provider: Technology Agency of the Czech Republic

Registration number: TL01000560

Project implementation: 1. 3. 2018 – 31. 3. 2021

Links: <https://starfos.tacr.cz/en/projekty/TL01000560;>

<https://www.favu.vut.cz/en/rad/projects/detail/29206>

Abstract: The project's focus was to develop an innovative tool to enable everyday users to achieve autonomy in a digital environment increasingly driven by the collection and analysis of big data. The team used a decentralised network architecture in which each node manages its own data, performs analysis and backups, and then shares the results via peer-to-peer (P2P) connections. This structure allows users to exchange analytical models and tools, creating space for collaborative data use and interpretation. The project has successfully integrated art and information technology in an

interdisciplinary approach. The artistic invention contributed innovative data visualisation, while the technological solution provided a robust infrastructure for decentralised data collection and sharing. The resulting application is a straightforward and intuitive tool that provides users with access to complex information and enables them to make decisions based on data analysis. The project builds on research on decentralised data mining and addresses the unequal relationship between ordinary users and ISPs. It introduces a democratic model of data management that empowers user autonomy and provides tools to model and predict complex systems. Its output is a significant contribution to improving digital literacy and to fostering innovation in data analysis and visualisation. The project is a representative example of the integration of creative artistic practices with technological innovation in order to strengthen the users' position and their self-determination in the digital space. This project aligns with the FFA BUT mission and vision by combining artistic and technological innovation to promote critical thinking and empower democratic participation in a digitally driven society.

4)

Project name: Searching for the Šlapanice Faith: Chrysanthemums, Community, Rituals, Memory

Registration number: FaVU-S-217349

Provider: Brno University of Technology – BUT Internal Projects

Project implementation: 1. 3. 2021 – 28. 2. 2022

Links: <https://www.favu.vut.cz/en/rad/projects/detail/32988>

Abstract: Artists Barbara Lungová, Marta Fišerová Cwiklinski, Lucie Králíková and Nina Grůňová focused on the preservation and artistic transformation of the cultural memory associated with the nearly extinct varieties of garden chrysanthemums bred by Jan Dvořák in Šlapanice u Brna. Their project documented Dvořák's legacy of chrysanthemum breeding and explored the materiality of chrysanthemums as an artistic medium. The results of this art-research project showing chrysanthemums not only as distinctive cultural artefacts but also as tools for exploring community and memory were presented in a gallery installation at the Brno House of Arts, through an intervention in public space, lectures, performative rituals and a collective monograph, [Šlapanice Faith: Community, Rituals, Memory](#), which collated archival research on Dvořák's work and his influence on the local community, describing the surviving varieties and documenting them with botanical illustrations. A botanical perspective on Brno is also the subject of the follow-up project, [Partyzánky s motyčkou – spontánní zahradničení ve veřejném prostoru](#) (Guerrillas with a Hoe – Spontaneous Gardening in the Public Space), in which the team of authors and researchers from the fields of law, social anthropology and sociology focused on the phenomenon of guerrilla gardening, i.e. unannounced gardening in Czech cities and landscapes. This project explores how spontaneous garden interventions can influence public space, both from an anthropological and artistic perspective. The project documents selected examples of this non-artistic practice, creates artworks inspired by guerrilla gardening and provides a theoretical reflection of the relationship between artistic and non-artistic garden interventions in the context of contemporary urban life and approach to public spaces.

The project resonates with the mission and vision of the faculty by employing interdisciplinary artistic research methods and by critically reflecting on the relationship between society and the use of public space, with a strong focus on the local cultural context and specific phenomena.

5)

Project name: Archive of Radek Pilař

Provider: Capital City of Prague

Registration number: DOT/62/05/010254/2023; S-MHMP 1183996/2022

Project implementation: 1. 1. – 31. 12. 2023

Links: <https://www.favu.vut.cz/en/rad/projects/detail/34492>; <https://radek-pilar.cz/>

Abstract: Pavel Ryška's [Archive of Radek Pilař](https://radek-pilar.cz/) represents a significant contribution to the knowledge, preservation and popularization of Czechoslovak visual culture of the second half of the 20th century. The aim of this basic research project was to comprehensively document and systematically organize the estate of Radek Pilař (1931–1993), a prominent graphic artist, illustrator and pioneer of multimedia art in the Czechoslovak environment. Its main focus was the processing of surviving writings and artworks. Pilař's archive includes manuscripts of treatments and scripts, working notes, correspondence, book and magazine illustrations, drawings, prints, paintings, collages, photo-assemblages, puppets, variable objects and experimental works. Each artifact from the artist's estate has been thoroughly documented, described, digitized, and subsequently published in an electronic catalogue, with the exception of his audiovisual works, which have already been documented by the National Film Archive. Throughout the project, lesser-known aspects of the artist's work were discovered, particularly his experimental works demonstrating his progressive approaches. The output included a detailed electronic catalogue of the author's work published on <https://radek-pilar.cz/>.

The project fulfils the mission and vision of the faculty by critically reflecting the visual culture of Czechoslovakia in the period of state socialism and the transformation era after the Velvet Revolution through scientific research and by making its results available to the general public and researchers.

6)

Project name: Matter – Recycling and Upcycling Centre

Provider: Quality Internal grants of BUT – KInG BUT

Registration number: FaVU-K-21-7031

Project implementation: 1. 2. 2021 – 31. 1. 2023

Link: <https://www.favu.vut.cz/en/rad/projects/detail/32653>; <https://matter.favu.vut.cz/>

Abstract: This project focused on promoting sustainable art production by creating a space for recycling and upcycling materials for art and design which also functions as a space for educating students and teachers about the principles of sustainability. The resulting recycling station provides access to materials that would otherwise end up as waste, encouraging creativity and environmental responsibility in art and design. The centre features a materials repository and a workshop where FFA students and staff can find supplies for their work free of charge and, in turn, return used materials for further use. The recycling station runs as a partnership with the commercial sector, where participating companies can donate surplus materials that would otherwise end up in landfills. The station is a place to source materials as well as share advice and skills, allowing people to try out and engage with materials as part of the creative process. The centre also hosts educational workshops on upcycling. Romana Drdová's project is inspired by Materials for the Arts, a similar programme she visited during her research stay in New York. The project is continuously developing, and, in the future, it could inspire other BUT faculties or institutions to create similar recycling stations. Currently, the project is still in operation and there are plans to include further partnerships with industrial and commercial facilities to expand the range of materials on offer. This project is in line with the mission and vision of the FFA BUT especially in the sense of linking art and education in addressing issues related to social responsibility for climate and sustainability. At the same time, its outcomes demonstrate that art and design can be agents of social dialogue and change.

7)

Project name: Self-organization as an Imagination Source for Post-Anthropocenic Landscape. An Artistic Research Project

Provider: Quality Internal grants of BUT – KInG BUT

Registration number: FaVU-K-21-7071

Project implementation: 1. 2. 2021 – 30. 4. 2022

Link: <https://www.favu.vut.cz/en/rad/projects/detail/32662>

Abstract: The project aimed to map and contextualizes the milestones of the Anthropocene and human interaction with the environment in Slovakia's Záhorie region. Led by Kristína Jamrichová, the art-research project redefined the roles of local natural substances, particularly eolian sands and peat bogs. Jamrichová demonstrated the mutual dependence of living and inanimate matter: eolian sands, though inhospitable to life, enabled the formation of living wetlands in dune depressions, which in turn supported human activities like hemp cultivation and water milling. The cycle continued with the decomposition of organic matter into peat or oil. The research with ethnographic elements utilized philosopher Yuka Hui's concept of "cosmotecnics" as an analytical and creative tool. The emergence of locally specific technologies, such as monoculture reforestation or large-scale water drainage, cannot be attributed solely to environmental influences; rather, they are the result of the negotiation of the environment with people's local ideas of cosmology. By exploring the local ways of 'dealing with nature', the project encouraged the formulation of so-called ecotopias (ecological utopias) based on an analysis of the past and present state and future forecasts for the local ecosystems. The main outputs of the project were a [peer-reviewed article](#) published in 2022 in the journal Notebook for Art, Theory and Related Zones, and the exhibition Quaestio de Aqua et Terra in Bratislava's Medium Gallery (2021), in which the researcher participated both as curator and author. All the exhibited works were created within the framework of the submitted project, either by the project researcher herself or in dialogue with other invited authors. The project fulfills the mission and vision of the FFA BUT in applying artistic research methods in critical reflection on social and environmental issues and a resilient and inclusive society, and in implementing art in the formation of social dialogue and ecological consciousness.

8)

Project name: Development of the HUMAIN Project Activities

Provider: Brno University of Technology – BUT Internal Projects

Registration number: FaVU-J-21-7306

Project implementation: 1. 3. 2021 – 28. 2. 2022

Links: <https://www.favu.vut.cz/utc/projekty/detail/32986>; <https://humain.space/>

Abstract: The project aimed to expand the activities of the HUMAIN platform, connecting artificial intelligence with design, art, humanities, and natural sciences. The platform responds to the evolving perception of AI – from a dystopian science fiction idea to a real phenomenon subtly influencing daily life. A key objective was to extend HUMAIN's work by researching local trends and risks linked to the everyday application of AI. In response to the growing demand for an interdisciplinary approach combining scientific, artistic, and social science perspectives, three editions of an interdisciplinary conference were organized in collaboration with Masaryk University (Industria, Brno, 19/9/2020; 2/10/2021; KUMST, Brno, 22/10/2022). By linking theoretical research with practical activities, the project fostered new collaborations between humanities and natural sciences scholars, designers, and artists. It expanded knowledge about AI and offered inspiration for its ethical and creative use. At the same time, in a very visionary way – before the mass spread of freely available chatbots, and

at a time when AI was still often perceived by the public as a "sci-fi phenomenon of the future", it brought deeper insights into its complex impact on society and culture. The project fulfilled its mission not only at the level of professional exchange of knowledge, but also at the level of communicating its themes to a wider audience. The HUMAIN platform continues to develop and participate in other projects focused on the use of AI across various fields of human activity in different contexts, such as the nationwide [AI Days festival](#). This project is in line with the mission and vision of the FFA, as it is based on wide-ranging interdisciplinary cooperation, develops contemporary discourse in the area between social and natural sciences, deepens critical thinking and adopts creative approach to technological and societal challenges.

9)

Project name: La Contextressa

Provider: Brno University of Technology – BUT Internal Projects

Registration number: FEKT/FaVU-J-20-6429

Project implementation: 1. 1. 2020 – 31. 12. 2021

Link: <https://www.favu.vut.cz/en/rad/projects/detail/31891>

Abstract: La Contextressa was a one-year artistic research project exploring AI and context, conducted as an inter-faculty collaboration by Dragana Zarevska (FFA) and Martin Kolařík (FEEC BUT)—both PhD students and researchers. The project was supported by the Student Grant Competition within the framework of specific university research at BUT. Initially, La Contextressa was conceived as a strongly opinionated Italian Nonna, watching passersby and silently commenting on everything and everyone around her. Over time, this persona evolved into an AI-driven device—a system built with Raspberry Pi, cameras, and speakers—trained to generate simple opinions about objects in its surroundings. Using COCO (Common Objects in Context) and SemArt (Semantic Reading of Art) datasets, the device could describe objects both literally and metaphorically, attempting to assign them deeper meanings. The [software](#) developed during the project was released as open-source. From an artistic research perspective, the project resulted in a prototype that explores language and its contextual use. Unlike conventional AI applications, La Contextressa was not designed for practical tasks, such as guiding visitors in museums or galleries, as she was deliberately unreliable in conveying information. This poetic anomaly positions La Contextressa not as a functional robot but as a work of art, challenging the expectation that AI should always be useful. The project demonstrated AI's potential in visual context recognition and association, as La Contextressa was capable of linking objects in its environment to individual images from art history, offering a unique perspective on how AI can engage with meaning-making beyond utilitarian purposes. By combining artistic and technological approaches, the project reflects the FFA mission and vision, promoting interdisciplinary collaboration and encouraging critical thinking about the role of AI in shaping society and culture. It also fulfils these objectives through its interdisciplinary approach and the use of artistic research methods to critically examine the impact of technological innovations on contemporary life.

10)

Project name: Client-oriented Data

Provider: Ministry of Labour and Social Affairs of the Czech Republic

Registration number: CZ.03.03.01/00/22_021/0001299

Project implementation: 1. 2. 2023 – 31. 3. 2024

Links: <https://ihrs.cz/program-pro-spolecnost/socialni-inovace/>;
<https://www.favu.vut.cz/en/rad/projects/detail/34849>

Abstract: Designers Ondřej Mohyla and Martina Růžicková from the FFA Research Centre and Department of Design, together with the non-profit IQ Roma Servis, responded to the inefficient system of recording information about social service users and the services provided. The project aimed to analyse the motivations and needs of stakeholders (users, providers, donors, and quality controllers) and to design and test a prototype solution using the Human Centred Design approach. The project's main output is a prototype client interface for a social services database system. A follow-up project, Client-Centred Data 2, funded by the Czech Ministry of Labour and Social Affairs (Operational Programme Employment Plus), further develops this prototype to create a modern IT tool for social work with direct client access. This tool aims to foster cooperation between clients and workers, support methodical guidance, and reduce administrative burdens. Emphasis is placed on sensitivity to technical skills, digital literacy levels, and the clients' access to technology, while striving to increase the above. An important activity of the project is building and strengthening the community of social service providers which would jointly develop the tool and ensure its sustainability. In building such a community, the FFA team is working with the Platform for Social Housing, bringing together organisations with innovative approaches to ending housing distress. The project also includes an ongoing collaboration with IT experts from the commercial sector to ensure the highest possible standard of technical development and subsequent maintenance of the tool. Consultants from the fields of social work, law and psychology are also involved in its development. The results of the project are made available online and accessible to a wide range of service providers. This project aligns with the mission and vision of the FFA BUT by fostering interdisciplinary cooperation, addressing social challenges through design, and encouraging innovative, inclusive solutions that benefit society.

Table 3.3.1 – Projects supported by public funds

In the role of beneficiary						
Provider ²⁴	Project name	Support (in thousands CZK/EUR) ²⁵				
		2019	2020	2021	2022	2023
1) Technology Agency of the Czech Republic/ (TAČR)	Institute of Forensic Interdisciplinary Research, Design and Architecture for Social Emancipation /Institut forenzního interdisciplinárního výzkumu, sociálně emancipačního designu a architektury (2020–2022); www.vut.cz/en/rad/projects/detail/31482		845,065 /33,340	989,683 / 39,040	293,862 / 11,590	
2) Technology Agency of the Czech Republic/ (TAČR)	Serious Educational Game about Roma Position in Society/Vzdělávací počítačová hra o postavení Romů ve společnosti (2023–2026); www.vut.cz/en/rad/projects/detail/34766					
3) Technology Agency of the Czech Republic/ (TAČR)	Decentralized Collection, Analysis, Visualization and Interpretation of Large Data in an Artistic Practice/ Decentralizovaný sběr, analýza, vizualizace a interpretace rozsáhlých dat v umělecké praxi (2018–2021); www.favu.vut.cz/en/rad/projects/detail/2920	653 /25,780	767 /30,260	86 /3,390		
4) Brno University of Technology – BUT Internal Projects	Searching for the Šlapanická Faith: Chrysanthemums, Community, Rituals, Memory/Hledání Šlapanické víry: chryzantémy, společenství, rituály, paměť (2021–2022) www.favu.vut.cz/en/rad/projects/detail/32988			219,900 /8,670		

²⁴ Ibid.

²⁵ Indicate the total amount expressed in thousands of CZK and the conversion of the total amount into Euro.

5) Capital City of Prague	Archive of Radek Pilař/Archiv Radka Pilaře (2023); www.favu.vut.cz/en/rad/projects/detail/34492					200 /7,890
6) Quality Internal grants of BUT (KInG BUT)	Matter – Centre for Recycling and Upcycling at the Faculty of FFA of BUT (2021–2023); www.favu.vut.cz/en/rad/projects/detail/32653			440,502 /17,380	475,833 /18,770	27,166 /1,070
7) Quality Internal grants of BUT (KInG BUT)	Self-organization as an Imagination Source for Post-anthropocenic Landscape. An Artistic Research project (2021–2022); www.favu.vut.cz/en/rad/projects/detail/32662			416,991 /16,450	62,168 /2,450	
8) Brno University of Technology – BUT Internal Projects	Development of the HUMAIN Project Activities and Exploratory Research for the Dissertation/Rozvoj aktivit projektu HUMAIN a explorační výzkum pro disertační práci (2021–2022); www.favu.vut.cz/en/rad/projects/detail/32986			138 /5,440		
9) Brno University of Technology – BUT Internal Projects	La Contextressa (2020–2021); www.favu.vut.cz/en/rad/projects/detail/31891		97,2 /3,830			
10) Ministry of Labour and Social Affairs of the Czech Republic	Client-oriented Data/Na klienta orientovaná data (2023–2024); www.favu.vut.cz/en/rad/projects/detail/34849					578,523 /22,820
Total		653,000 /25,780	1709,265/ 67,430	2291,076/ 90,370	831,863 /32,810	805,689 /31,780

Table 3.3.2 – Contract research activities

Client ²⁸	Activity name/description	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
National Heritage Institute	Design and realization of the visual style and advertising campaign for the year-long project of the National Heritage Institute Year of the Enlightenment Nobility; another important output of the project: the publication Faces of Enlightenment (shortlisted for the competition for the Most Beautiful Czech Book of 2021)			108 / 4,260		
Masaryk Memorial Cancer Institute	Intervention for preparatory construction – part 1, 2 & 3 Design of the interior of two new pavilions and the day clinic of the largest cancer treatment centre in Czechia using the combined results of artistic research focused on the condition and comfort of the clients and insights from psychology and health care: creating the institution's new visual identity				660 / 26,035	
Total				108,000 / 4,260	660,000 / 26,035	

3.4 Research results with existing or prospective impact on society

The evaluated unit shall briefly comment on a maximum of 10 (considered most significant by the evaluated unit) research results already applied or realistically heading towards application during the period of 2019–2023, based on the overview annex table 3.4.1 (it is recommended to indicate results with a link to projects listed in indicator 3.3). The evaluated unit must demonstrate in its description that the research results have led or will soon lead to positive impacts²⁶, on society (e.g. description of how the results are used by various users, the range of persons/institutions for which the result is relevant, measurable economic impacts, etc.). The evaluated entity shall indicate in its commentary whether the gender dimension is considered in these results and discuss the impacts of the results regarding sustainability.

Maximum range 300 words/result.

Self-assessment:

During the period 2019–2023, the faculty and its staff carried out dozens (45) of projects in the field of artistic research, which were evaluated in the [Nation Register of Artistic Outputs \(RUV\)](#) as internationally excellent (AKX, ALX, AMX) in the areas of design and fine arts. While the faculty ranked among the most excellent institutions in the Czech Republic during the given period— [see this graph reflecting RUV points](#); additional statistics available here: <https://www.favu.vut.cz/en/faculty/quality-assessment> – the full list of outputs is not provided here. Instead, three examples are included at the end of the list below.

- 1) **Result RIV B (peer-reviewed book): JAMRICOVÁ, Kristína, KOZERAWSKI, Denis, MÁCHA, Jakub, MENŠÍKOVÁ, Barbora, MOHYLA, Ondřej, NOVOTNÝ, Roman, RŮŽIČKOVÁ, Martina, ZÁLEŠÁK, Michal. *Mesto pre všetkých? Odkrývanieinfraštruktúrysegregácie*. 1st edition. Brno: FFA BUT, 2022. 288 p. ISBN: 978-80-214-6075-1.**

Year of application of the result: 2022

The publication *Mesto pre všetkých* ([The Town for Everyone? Uncovering the Infrastructure of Segregation](#)) is one of the outputs of the applied research project Institute of Forensic Interdisciplinary Research, Socially Emancipatory Design and Architecture, facilitated by the Technology Agency of the Czech Republic and implemented in 2020–2022. It presents the engaged interdisciplinary research, reflecting the different disciplinary focus of the members of the team. The team carried out research and intervention activities in an excluded locality in Veľký Krtíš in south-eastern Slovakia and the resulting book is conceived as a case study set in the broader systemic context of Slovakia, including through the analysis of social housing areas within the planning of Slovak cities. The content of the book has been used as evidence in an eviction litigation; in most cases, the courts recognised the obligation of the city of Veľký Krtíš to provide alternative housing for the evicted residents, setting a precedent for deciding similar disputes. It is also being used in advocacy meetings with MPs on behalf of the population in similar situations and has been beneficial for an active civil society. The presented case study is an inspiration for solving social problems and describes a specific excluded locality as well as good practice in solving the crisis through meetings, seminars, conferences, linking institutions, developing social services, defending the interests of the inhabitants of the locality and improving their material and social conditions. The gender aspect of the project is reflected in the way the research and interventions consider the specific needs and challenges faced by women in marginalized communities, particularly in the context of social housing and eviction processes, where gender inequality often exacerbates the vulnerability of women and children.

This project aligns with the mission and vision of the faculty – it promotes interdisciplinary research and addresses societal challenges such as housing inequality, while encouraging social change, critical

²⁶ See Terms definition.

thinking, and the active engagement of marginalized communities in shaping a more resilient and just society.

<https://www.favu.vut.cz/en/publishing/publications-f147703/mesto-pre-vsetkych-odkryvanie-infrastruktury-segregacie-city-for-all-uncovering-the-infrastructure-of-segregation-d265530>

2) Result Card game and manual: Starostlivosť z budúcnosti (Care from the Future) card game, 500 copies published by FFA BUT and distributed together with the publication Mesto pre všetkých? Odkrývanie infraštruktúry segregácie

Year of application of the result: 2022

“Care from the Future” is one of the outputs of the applied research project titled Institute of Forensic Interdisciplinary Research, Socially Emancipatory Design and Architecture, facilitated by the Technology Agency of the Czech Republic as part of the ÉTA programme and implemented in 2020–2022. The game is distributed together with the book *Mesto pre všetkých? Odkrývanie infraštruktúry segregácie* (The Town for Everyone? Uncovering the Infrastructure of Segregation) and was part of the accompanying programme of exhibitions presenting the project results. It was presented in facilitated game meetings, for example with representatives of the Košice municipality during the Never Never School 2021 summer school or with pupils and teachers at the primary school in Veľký Krtíš. The game is a tool for developing imagination about the future and finding satisfactory solutions to future crises. It creates a space for non-confrontational encounters between opponents or experts and lay people and stimulates subsequent discussion. It is designed to facilitate participatory workshops with the public and meetings between experts and politicians. Primary, secondary and higher education institutions can integrate the game into their curricula. The game is also intended for the general public and non-profit organizations. It is based on a 2014 game design by Situation Lab (Stuart Candy and Jeff Watson), originally titled Thing from the Future. The game is a communication tool promoting empathy, solidarity and creativity, highlighting that the needs of different groups vary, and bringing the needs, rights and dignity of overlooked social groups to the fore. The gender aspect of the project is embedded in the game's design, which emphasizes empathy, solidarity, and creativity, encouraging participants to consider the diverse needs of various social groups, including women and marginalized gender identities, and to address the inequalities they face in future crisis scenarios. This project reflects the faculty's mission and vision by integrating interdisciplinary research, socially engaged design, and participatory tools to address societal challenges, fostering critical thinking, empathy, and inclusive dialogue that contribute to building a resilient and equitable society.

<https://www.favu.vut.cz/utc/publikace/detail/182439>

3) Result RIV R (software): Software THX – Anonymous Data Sharing System Key Output of the Project

Year of the application of the result: 2021

The @thx/chat chat application is one of the outputs of the project [Decentralized Collection, Analysis, Visualization and Interpretation of Large Data](#). It implements the developing protocol for decentralized communication, collection, interpretation and sharing of data, which contributes significantly to enhancing user autonomy and privacy in digital environments. Communication is secured by end-to-end encryption, the current industry standard in data protection. This approach ensures that the content of messages remains strictly between the sender and the receiver. The minimized role of the server, limited only to signalling functionality to establish a P2P connection, further eliminates the risks associated with centralized data processing. The application allows data analysis and interpretation to be performed directly on client devices and results shared in dynamic graphs exclusively between users connected within a single communication thread. The decentralized structure supports privacy, secure collaboration and transparency. In addition, creative data visualization and interpretation enhances digital literacy and enables users to make informed decisions. The evolving protocol brings a democratic model of data management that addresses the

imbalance between ordinary users and digital communication service providers. It fosters a culture of collaboration and innovation, minimises the risks of data misuse and thus contributes to improving the quality of social life, minimising the risks of data misuse and thus contributing to an improved quality of social life. This tool, if further developed, can represent a sustainable technological solution with the potential for international impact. The project supports the mission and vision of the faculty by fostering innovation at the intersection of art, technology, and social responsibility, while empowering public engagement through critical approaches to data privacy, digital literacy, and collaborative communication.

<https://www.favu.vut.cz/vav/vysledky/detail/170834>

<https://thx.ffa.vutbr.cz/en-US/hello>

4) Result: Recycling centre

Matter – Recycling and Upcycling Centre

Year of the application of the result: 2023

The Matter Recycling and Upcycling Centre, established at the FFA BUT thanks to the Matter – Recycling and Upcycling Centre project implemented in 2021–2023, is an innovative space combining art and design with the principles of circular economy and sustainability. The centre focuses on supporting artists and designers to implement environmentally responsible practices in their work, thereby contributing to sustainability in the arts sector and wider society. It offers access to materials that would otherwise end up as waste through a recycling station and material repository where FFA students and staff can find materials for their work and return used materials for reuse, free of charge. This sustainability model is supported by working with industry partners to allow companies to donate surplus materials that would otherwise end up in landfills. As well as providing a sustainable material base for the creative process, the centre also promotes and reinforces economic and environmental responsibility by providing advice and hosting educational workshops aimed at sharing upcycling skills. The gender aspect of the project is reflected in its inclusive approach, ensuring that women and other underrepresented genders in the fields of art and design have equal access to the resources and opportunities provided by the Matter – Recycling and Upcycling centre, while also encouraging diverse perspectives in the pursuit of sustainable and environmentally responsible practices. The project reflects the mission and vision of the faculty by positioning design as a catalyst for sustainability and social responsibility, while fostering interdisciplinary approaches that address contemporary environmental and societal challenges.

<https://matter.favu.vut.cz/>

5) Result: Electronic catalogues

Result of Archive of Radek Pilař: An electronic catalogue of the works of the pioneer of intermedia art in Czechoslovakia

Year of the application of the result: 2023

The result of Pavel Ryška's project is an electronic catalogue of the works of Radek Pilař published at radek-pilar.cz. Visual and textual information is presented with an emphasis on high image quality, informative value and overall clarity given by the original design of the interface. The electronic catalogue allows users – researchers as well as the general public – to explore Pilař's work interactively. It serves as a source of not only information but also inspiration for further research and free creation. Navigation within the archive is facilitated by the division of the material into eight basic categories (free works, illustrations, cartoons, film and video, scenography, printed matter, photographs, manuscripts and documents). Some of these categories represent themes that the author dealt with intensely and for a long time, while other categories supplement the documentation of the author's work with selected manuscripts, printed matter and photographs, especially images from studios and exhibitions. The user interface allows full-text search by keywords throughout the catalogue and in a selected period. Each entry in the archive contains a preview of the work or document,

basic characteristics and links to related realisations. Published works are linked to the Kramerius 5 system, which allows users to view digitized pages of books and journals from the collections of the National Library of the Czech Republic and to compare original drafts with print outputs. The catalogue is also linked to the Video Archive, a collection of the National Film Archive, which cares for the art of the moving image.

The project supports the mission and vision of the faculty by combining innovative digital tools with high-quality art historical research, making the results accessible to both experts and the wider public, and contributing to contemporary discourse in visual culture.

<https://radek-pilar.cz>

6) Result: Walking tour and audio guide

Result of Guerillas with a Hoe – Spontaneous Gardening in the Public Space: walking tour and audio guide

Year of the application of the result: 2023

[Guerillas with a Hoe – Spontaneous Gardening in the Public Space](#) led to the creation of a unique walking route and audio guide that combine art, social anthropology and guerrilla gardening. A team of researchers from FFA BUT and external collaborators mapped neglected urban green spaces and the phenomenon of nature in public space. The result is a walking tour that allows visitors to explore these neglected places with the help of an interactive audio guide. Drawing on the findings from social anthropologists Hana Drštičková and Anastasia Blokhina's ethnographic research on street gardening in Brno, and based on artistic interventions in urban space responding to the phenomenon of guerrilla gardening, the team created a walking tour with twelve stops and an audio guide with commentary on the planting, excerpts from interviews and a soundscape of urban nature. The audio guide can be downloaded via the [Echoes app](#) or at the [socialmaps.app](#) website. The project is also presented as an [exhibit](#) on the arts research platform Research Catalogue, including further details of the project and a comprehensive photographic accompaniment. The result has a strong environmental educational dimension: it raises awareness of environmental issues such as sustainability and the use of public spaces for growing plants, and contributes to a wider discussion about public spaces, urban planning and the importance of neglected urban 'vague terrain' sites. The gender aspect of the project is present in the research and artistic interventions, as it highlights the involvement of women, such as Hana Drštičková and Anastasia Blokhina, whose ethnographic work and perspectives on street gardening contribute to understanding how different genders engage with and transform public spaces through guerrilla gardening.

This project resonates with the mission and vision of the faculty primarily in that it uses interdisciplinary research and artistic practice to address societal challenges such as environmental sustainability and quality, while also emphasizing gender equity by highlighting the contributions of women researchers and their perspectives on transforming public space through guerrilla gardening.

7) Result: Expert output for policy-making

Result of the research into the activities of architect Adolf Loos: Defining the conditions for the public tender for the Adolf Loos Culture Centre and the design of the exhibition in the director's villa of the former sugar refinery in Hrušovany u Brna

Year of the application of the result: 2022–2023

The results of Jana Kořínková's (Department of Art History and Theory) long-term research into the activities of one of the founding figures of modern architecture and Brno native Adolf Loos have already been published in a number of respected [publications and scholarly articles](#). The current output of her research with significant impact on practice is the formulation of the conditions of the public tender V 00668 – Restoration and new use of the director's villa of the former sugar refinery in Hrušovany u Brna for the Adolf Loos Cultural Centre – selection of the designer. When announcing the conditions for the tender, the municipality of Hrušovany u Brna was able to rely on the author's

research revealing new facts related to the architect's work with the builder Viktor Bauer Jr., or one of his industrial enterprises, which was the Hrušovanská cukerní rafinerie, a.s., between 1913 and 1925. The public tender, as a prime example of the immediate social impact of fundamental research on practice, was published in [Věstníku veřejných zakázek \(Public Procurement Bulletin\) on 10 August 2023](#). Subsequently, the project contractor was selected, and Jana Kořínková was appointed to the advisory body overseeing the project preparation and the actual reconstruction of the villa. She is currently working on the design of the permanent exhibition for the Adolf Loos Cultural Centre.

The project is in line with the mission and vision of the faculty, particularly in the sense that the scientific research carried out within it brought new findings about the work of Adolf Loos, one of the most important initiators of not only European modern architecture, and that its results were successfully put into practice and thus contributed to the establishment of a cultural institution that transcends the local context.

[Austrian journal for art and monument preservation](#); [irozhlas.cz news \(CZ\)](#)

8) Result RUV (RUV ID 58749, certified AKY): Graphic solution for the Prague Integrated Transport **Year of application of the result: 2020**

The implemented graphic solution for the Prague Integrated Transport (PID) system represents a significant step toward the modernization and unification of public transport visual identity across Prague and the Central Bohemian Region. The new identity emerged as the winning proposal in a design competition organized by the professional platform Czechdesign. Selected by an expert jury for its clarity, elegance, and respect for tradition, the visual system introduces a clean and contemporary graphic language that references the iconic T3 tram through its distinctive red colour palette. The core objective of the project was to present public transport as a coherent, user-friendly service suitable for the 21st century. The new identity enhances legibility, improves passenger orientation, and promotes safety—all while maintaining cost efficiency by applying the design to newly acquired vehicles without requiring additional expenditure. The system-wide design unifies a previously fragmented visual landscape: prior to implementation, different graphic standards applied across city and suburban buses, with no cohesive identity for trams, trains, or the metro. One of the most recognizable elements of the new identity is the use of bold red vertical stripes on vehicles. These stripes mark door locations, improving visibility, orientation, and operational safety, while simultaneously creating a strong and unmistakable visual presence for the PID system. With 27 carriers and 67 different vehicle types now falling under the unified design, the project facilitates intuitive navigation for passengers and supports the ongoing expansion of PID across the Central Bohemian Region. The significance and design excellence of the project were recognized by a nomination for the Czech Grand Design Award in the category Graphic Designer of the Year, underlining its impact on public space and contemporary visual culture.

<https://www.favu.vut.cz/en/rad/awards-recognition/f91716/d201263>

<https://www.czechdesign.cz/temata-a-rubriky/verejna-doprava-v-praze-bude-mit-novou-a-sjednocenou-podobu-soutez-na-kompletni-vizualni-identitu-vyhralo-studio-superlativeworks>

<https://www.czechdesign.cz/temata-a-rubriky/vime-prvni-kdo-si-odnese-ceny-czech-grand-design>

9) Result RUV (RUV ID 58573, certified AKX): Graphic solution for Prague Exhibition Grounds **Year of application of the result: 2020**

The newly implemented visual identity of Výstaviště Praha (Prague Exhibition Grounds, a 36-hectare complex with a long tradition and an attractive location near the city centre) marks a key step in the transformation of one of Prague's most iconic public spaces into a modern, multifunctional cultural venue. The design – developed by Tereza Hejmová, Štěpán Malovec, and Martin Odehnal – was selected as the winning proposal in a two-round invited competition organized by CZECHDESIGN. The concept emerged as a clear favourite thanks to its strong conceptual grounding, visual clarity, and capacity to flexibly accommodate the wide range of activities hosted within the area. At the heart of

the new identity lies a simple yet effective idea: transforming the established name “Výstaviště” into a place-based designation by adding the preposition “Na” (“at”), thus anchoring the brand in everyday language and reinforcing its connection to the location. The resulting system – Na Výstavišti – functions dynamically, pairing the phrase with various activities and events, creating an adaptable and conversational tone of voice. The visual style is built on a dual-typeface system combining Rhymes (serif) and Monument (sans serif) and is designed to evolve over time through collaborations with artists, illustrators, and photographers, maintaining a consistent framework while supporting visual diversity. The identity is being rolled out across signage, navigation, promotional materials, and internal and external communication, reflecting the ongoing revitalization of the site – including infrastructure upgrades, expanded programming, and enhanced public amenities. The project was nominated for the Czech Grand Design Award in the Graphic Designer of the Year category, recognizing its inventive approach, clarity, and capacity to communicate with a wide and diverse audience.

<https://www.favu.vut.cz/en//f91716/d289112>

<https://www.czechdesign.cz/temata-a-rubriky/na-vystavisti-vystaviste-praha-prochazi-zmenou-a-predstavuje-silnou-a-napaditou-vizualni-identitu-od-designerskeho-tria>

<https://www.font.cz/design/vystaviste-praha-predstavuje-novou-vizualni-identitu.html>

10) Result RUV (RUV ID 64369, certified AKY): Solo exhibition at Villa Arson in Nice, France

Year of application of the result: 2021

Miles, a solo exhibition by artist Julie Béna at Villa Arson in Nice, France, presents a striking and poetic intervention into the codes of theatricality, sculpture, and narrative structure. Curated by Marie de Bruguerolle, the exhibition was conceived specifically for the Galerie carrée. Known for her genre-defying practice that blurs boundaries between performance, film, object, and text, Béna constructs a world that is at once ironic, tragic, and surreal. At the heart of Miles lies a play with oxymoron and contradiction. The exhibition acts like a “light opera” – open, layered, and emotionally sharp. Visitors enter a scenographic landscape populated by life-sized silhouettes of horses, a dead tree, a cart, artificial rocks, and fiery flowers, evoking both cinematic memory and stage illusion. The centrepiece of the exhibition is The Aspirants, a new group of twelve steel sculptures produced in Prague. Their jagged black forms contrast with the geometric clarity of the gallery's ceiling grid, casting fragmented shadows and creating a constellation of sculptural presences that resist containment within the modernist white cube. These elements – appearing as remnants of a stylized Western or references to Westworld – evoke a decaying imaginary of the West: a space of both conquest and collapse, of borders imposed and dissolved. Béna's spatial dramaturgy, with its ambiguity and wit, invites viewers to move through a fragmented fiction where theatrical illusion and sculptural presence are held in tension. The exhibition was internationally recognized and named one of the five most remarkable exhibitions in Europe by Italian magazine ZOE, affirming its critical resonance and artistic significance.

<https://www.favu.vut.cz/en//f91716/d289123>

<https://villa-arson.fr/programmation/expositions/julie-bena-miles/>

<https://www.zoemagazine.net/176978-5-unmissable-exhibitions-in-europe/>

Table 3.4.1 – Overview of research results in the period under evaluation

Type of result ³⁰	Year of application	Name
Peer-reviewed book (RIV B)	2022	Mesto pre všetkých? Odkrývanie infraštruktúry segregácie (The Town for Everyone? Uncovering the Infrastructure of Segregation)
Card game and manual	2022	Starostlivosť z budúcnosti (Care from the Future)
Software (RIV R)	2021	Decentralized Collection, Analysis, Visualization and Interpretation of Large Data in an Artistic Practice
Recycling centre	2023	Matter – Recycling and Upcycling Centre
Electronic catalogues	2023	Archiv Radka Pilaře (Archive of Radek Pilař)
Walking tour and audio guide	2023	Partyzánky s motýčkou – spontánní zahradničení ve veřejném prostoru: Vycházkový okruh a audioprůvodce Guerillas with a Hoe – Spontaneous Gardening in the Public Space: Walking tour and audio guide
Expert output for policymaking: public tender for the Adolf Loos Cultural Centre and an exhibition in the director's villa of the former sugar factory in Hrušovany u Brna	2022–2023	Designing conditions for the public tender for the Adolf Loos Cultural Centre and design of the exhibition in the director's villa of the former sugar refinery in Hrušovany u Brna based on ČERNOUŠKOVÁ, Dagmar – KOŘÍNKOVÁ, Jana. „Das Haus ist viel zu groß ...Innenist nichts zu holen“ – Die Adolf Loos-Villa des Direktors der Rohrbacher Zuckerraffinerie. In: ÖZKD – Österreichische Zeitschrift für Kunst und Denkmalpflege LXXVI, 2022, Nr. 1, s. 113–129. ISSN: 0029-9626.
Graphic solution for the Prague Integrated Transport (Result RUV, certified AKY)	2020	Graphic solution for the Prague Integrated Transport (PID)
Graphic solution for Prague Exhibition Grounds (Result RUV, certified AKX)	2020	Na Výstavišti!, Graphic solution for Prague Exhibition Grounds
Solo exhibition (Result RUV, certified AKY)	2021	Miles, Solo exhibition at Villa Arson in Nice, France

Note: Please list and describe the results already applied in practice or heading towards application in practice with existing or prospective impact on the society (e.g. domestic or foreign patents, sold licenses, spin-offs, prototypes, varieties and breeds, methodologies, significant analyses, surveys, expert outputs for policymaking or other forms of non-publication outputs, etc.). Indirect results of research, development and creative activities with documented societal impact, e.g. expert activities, services to the public/government/scientific community, may also be reported.

TRANSFER OF RESULTS INTO PRACTICE

3.5 Transfer of results into practice

The evaluated unit shall briefly describe its system for transferring results into practice. It shall also indicate up to five of the most typical users of its results, whether in the university environment or in the non-university application/corporate sphere, detailing how it collaborates with them and how it seeks out new users (using a maximum of five specific examples).

It will also indicate whether and how it commercialises R&D&I results (e.g. selling licences, setting up start-up or spin-off companies, etc.)²⁷, providing brief description of the commercialisation methods used. The effectiveness of the transfer of results and the commercialisation of R&D&I results will be described using a selection of results (max. five) listed in annex table (Table 3.4.1).²⁸

Additionally, the evaluated unit shall briefly comment on the funds received during the period of 2019–2023 from non-public, non-grant sources (e.g. licences sold, spin-off revenues, donations, etc.). A full summary shall be provided in annex table (Table 3.5.1).

Maximum 500 words plus 200 words for each provided example of finding a new user of results and commercialization.

Self-assessment:

FFA has long been linking artistic practice, academic research and technological innovation as described in Section 3.4 and Table 3.4.1. It actively contributes to transferring its results into practice through cooperation with public institutions, government authorities, non-profit organizations and the commercial sphere. The system of transfer of results into practice is based on an interdisciplinary approach and the use of state-of-the-art technologies available to the faculty. The results are applied in a wide range of fields – from art and design projects and exhibitions to projects focused on conservation, archaeology and anthropology, environmental science, social services, information science and educational initiatives. FFA takes part in research whose results are used for professional purposes, such as the restoration of cultural monuments or the design of anthropological reconstructions for scientific and museum institutions, as well as outreach to the public through exhibitions and educational activities or projects focused on practical yet innovative and effective solutions to social issues or computer literacy. Its activities have not only an academic but also a practical and social impact.

The key departments of the faculty include the [Research Centre](#) and the Department of Art History and Theory as well as Department of 3D Technology and the Department of Audiovisual Technology <https://www.favu.vut.cz/en/facilities>), which successfully implemented a number of projects that contributed to the transfer of science and research results into practice, both within and outside the university environment, in the period under evaluation, 2019–2023.

FFA also actively seeks new users for its results through open calls, partnerships with public institutions and private entities, and participation in international conferences. Specific cases include the application of 3D technologies in the creation of documents for data archiving, the restoration of sculptures and the production of their replicas, as well as the creation of documents for the anthropological reconstruction of prehistoric skeletal finds and remains using 3D scanning and 3D printing, and technological support for the work of renowned visual artists, which are implemented by the [Department of 3D Technology](#)). Among the most prominent users of the results are the following institutions: the Institute of Archaeology of the Czech Academy of Sciences, the Institute of

²⁷ In the case of military HEIs, their specific position is taken into account when evaluating the commercialisation/evaluation of R&D&I results.

²⁸ If the commercialisation of R&D&I results is carried out in this way.

Medical Genetics and Genomics of the Faculty of Medicine of the Masaryk University, the Moravian Museum, the National Gallery in Prague, the National Heritage Institute, or the National Museum in Prague.

Activities such as the sale of licenses for the use of digital models, the establishment of spin-off projects such as the [Ateliér duchů](#) [Studio of Ghosts] linked to FFA's Game Media Studio focused on the development of digital and board games, or the provision of scanning and printing services on demand contribute to the commercialization and valorisation of R&D&I results. The effectiveness of these approaches is illustrated by successful projects that boost FFA's prestige and influence in the cultural, social and commercial spheres, a selection of which is presented below (see point 2.2).

FFA's achievements and contributions in transfer to practice are demonstrated by financial income from non-public, non-grant sources, including donations and commissioned projects. We provide a detailed overview in Table 3.5.1. This systematic approach demonstrates the faculty's ability not only in the areas of education, research, liberal arts, and design, but also in the effective transfer and application of accomplishments into practice.

Typical users of FFA BUT results:

1. Government bodies and non-profits
2. Scientific, research and cultural institutions
3. Municipalities
4. The commercial sector and creative industries

1) Government bodies and non-profits (extending into the education segment)

Result name: RIV B (peer-reviewed book): JAMRICOVÁ, Kristína, KOZERAWSKI, Denis, MÁCHA, Jakub, MENŠÍKOVÁ, Barbora, MOHYLA, Ondřej, NOVOTNÝ, Roman, RŮŽIČKOVÁ, Martina, ZÁLEŠÁK, Michal. *The Town for Everyone. Uncovering the Infrastructure of Segregation*. 1st edition. Brno: FFABUT, 2022. 288 p. ISBN: 978-80-214-6075-1.

Research facility: FFA BUT Research Centre

Partner institutions: IQ Roma Servis; Ministry of Labour, Social Affairs and Family of the Slovak Republic

Use of the work and its transfer into practice: The publication created within the framework of the applied research project Institute of Forensic Interdisciplinary Research, Socially Emancipatory Design and Architecture, supported by Technology Agency of the Czech Republic as part of the ÉTA programme (2020–2022), is an essential example of interdisciplinary research by a team from the faculties of Arts and Science of Masaryk University, as well as a lawyer from the European Roma Rights Centre and an expert on social housing with practical and social impact. A collective monograph analysing the issue of excluded localities in the former mining town of Veľký Krtíš in Slovakia was used as evidence in litigation concerning the eviction of members of marginalised groups, the decisions of which set a precedent regarding alternative housing solutions in their favour. The results of the book have a vast practical application: they serve as a basis for advocacy activities, public discussions and political negotiations in Slovakia and the Czech Republic. Thanks to its distribution and public presentations in Bratislava, Prague and Brno, the book has reached both the professional and lay public and has become an inspiration for addressing the housing crisis and improving the material and social conditions of residents affected by social segregation. The success of the publication is confirmed by a review in the renowned [A2 magazine \(No. 19/2023\)](#), which reflects its importance in the context of current efforts to address housing in the Czech and Slovak environment and demonstrates its long-term benefit and relevance.

Methods of transferring the outputs listed under point 1) into practice:

- **Distribution and licensing** – Publication is offered to universities, schools, and public institutions through direct. “The Care from The Future” game is distributed non-commercially as a free annex of the publication.
- **Workshops and training** – Facilitated game sessions and professional seminars are organized on non-commercial basis for the public, policymakers, and schools. E.g. was used recently (2023) in workshop, as part of “Social Innovation Forum” conference in Prague, CZ.
- **Collaboration with public institutions**– Implementing research results in educational and development programs with support from government bodies. E.g. is used in “Design in context” university course at Department of Philosophy MUNI.

This system enables the **effective dissemination** of research results with a **direct social impact**.

2) Scientific, research and cultural institutions

2.1

Result name: Archive of Radek Pilař: An Electronic Catalogue of the Works of the Pioneer of Intermedia Art in Czechoslovakia

Research facility: FFA BUT Department of Audiovisual Technology

Partner institutions: National Library of the Czech Republic, National Film Archive

Use of the work and its transfer into practice: The Archive of Radek Pilař represents a significant contribution to the documentation, knowledge and popularisation of Czechoslovak visual culture of the second half of the 20th century. The electronic catalogue available on the website <https://radek-pilar.cz/> makes the extensive legacy of this pioneer of multimedia art accessible to the public and experts. The archive includes manuscripts, correspondence, illustrations, drawings, prints, experimental works and other artifacts that have been digitized and systematically organized. The catalogue thus serves as an invaluable source of information for researchers, curators, and members of the creative professions who find inspiration and background information for their projects. The archive has a wide range of practical applications: it provides the basis for professional research, supports educational activities, facilitates curatorial activities and develops public debate on cultural heritage. Of particular importance is also the uncovering of lesser-known aspects of Pilar's work, especially his experimental works that demonstrate his progressive approaches. A major contribution of the output is also its interconnection with the Kramerius 5 system of the National Library of the Czech Republic and the Video Archive – the collection of the National Film Archive.

Methods for the transfer of the results of point 2.1. into practice:

- **Educational programs and workshops:** The electronic catalogue serves as a source of inspiration and visual materials. The documents contain no protective elements and can be freely used in workshops, online courses, art history education in museums, art classes in primary schools, and various student projects. The visual documentation of artworks from the Archive of Radek Pilař can be used for study and research purposes (with proper citation of the source). The archive also offers researchers and students the opportunity to personally view selected items.
- **Cooperation with cultural sector:** Institutions engaged in exhibition activities can borrow original artworks from the Archive of Radek Pilař for both short-term and long-term exhibitions. The archive's resources contributed to the extensive retrospective Radek Pilař 90 at Villa Pellé Gallery in Prague, or a thematic exhibition about the “gallant robber” Rumcajs, the hero of children's books and animated series, created for the cultural and tourism department of the municipal office in Jičín. The archive also lent original drawings and production cels for the *Večerníček 60* exhibition [*Little Bedtime Story 60* exhibition], organized by Czech Television to celebrate the anniversary of the iconic children's program opening sequence, designed by Radek Pilař in 1965.
- **Integration with public databases:** The usability of the Archive of Radek Pilař is enhanced by linking the electronic catalogue with national art databases and academic archives. Radek Pilař's published

illustrations reference the Kramerius 5 system, which provides access to digitized pages of books and magazines from the collections of the National Library of the Czech Republic, allowing for a comparison of original artworks with printed outputs. The catalogue is also connected to the Video Archive – a collection of the National Film Archive. This approach ensures the practical application of research outcomes and strengthens interdisciplinary collaboration between the arts, education, and technology.

- **Opportunities for the commercial sector:** For those interested in publishing and commercial use of visual materials, the Archive of Radek Pilař offers high-resolution scans and photographs suitable for print. Revenue from the sale of reproduction rights for artworks – used, for example, in advertising, and the production and distribution of design products such as games, toys, calendars, or postcards – helps finance the continued operation of the website, the electronic catalogue database, and the ongoing care of Radek Pilař's artistic legacy.

This approach ensures both the **practical application of research outcomes and their sustainable commercialization**, strengthening **interdisciplinary collaboration** between **the arts, education, and technology**.

2.2

Result name: Long-term cooperation with the Laboratory of Anthropological Reconstruction– LAR, Brno (2019); *Madonna of Vimperk* (2020); Gregor Johann F (2022); Eva Kořátková: *The Heart of a Giraffe in Captivity is Twelve Kilos Lighter* (2023)

Execution workplace: FFA BUT Department of 3D Technology

Partner institutions: Institute of Archaeology of the Czech Academy of Sciences – Visitor Centre Mušov – Gateway to the Roman Empire, National Museum in Prague, Moravian Museum in Brno; National Heritage Institute, Faculty of Restoration, University of Pardubice; Institute of Medical Genetics and Genomics, Faculty of Medicine, Masaryk University; National Gallery in Prague

Use of the work and its transfer into practice: The Department of 3D Technology has long been engaged in the development of interdisciplinary projects that integrate fine art, scientific research, and the preservation of cultural heritage through cutting-edge digital technologies. Its work exemplifies the effective transfer of artistic and scientific research into practical applications. In 2019, the department collaborated with leading museums and research institutions on anthropological reconstructions, including a Roman skull for the Mušov Visitor Centre, a Celt from the Závist oppidum for the National Museum, and a shaman from Dolní Věstonice for the Moravian Museum ([lar-art - ROMAN](#); [lar-art - MAN FROM OPPIDA ENVY](#); [lar-art.com - A SHAMAN FROM THE LOWER HERALDS](#)). In 2020, the department produced a sculptural replica of the Madonna of Vimperk (1400–1410), one of the most significant examples of late medieval sculpture in the Czech lands. Using high-resolution 3D scanning and robotic milling, it contributed to both the conservation and public presentation of this key artwork ([propamatky.info \(CZ\)](#); [npu.cz \(CZ\)](#); [idnes.cz - news \(CZ\)](#)). In 2022, a detailed colour 3D scan of the remains of Gregor Johann Mendel—the founder of genetics—was carried out, facilitating research and presentation without physical contact with the original remains (<https://ct24.ceskatelevize.cz/clanek/regiony/vzorky-mendelovy-dna-z-vlasu-a-ostatku-z-hrobky-se-shodují-potvrdilo-zkoumání-27694>). In 2023, the department supported Eva Kořátková's installation for the 60th Venice Art Biennale—one of the world's foremost art events—through 3D scanning and printing of sculptural components ([labiennale.ngprague.cz](#) [labiennale.org](#) - [czech-republic](#); <https://meyer-riegger.com/ma/stories/the-heart-of-a-giraffe-in-captivity-is-twelve-kilos-lighter>; [www.artealdia.com](#), [artreview.com](#), [Vernisagge TV - Pavilion of the Czech Republic at the Venice Art Biennale 2024](#)). These projects underscore the department's vital role in applying digital technologies across cultural, educational, and scientific contexts, in transferring research outputs into practice, and in making them accessible to the wider public.

3) Municipality

Result name: research into the activities of architect Adolf Loos: Defining the conditions for the public tender for the Adolf Loos Culture Centre and the design of the exhibition in the director's villa of the former sugar refinery in Hrušovany u Brna

Partner institutions: Hrušovany u Brna municipality, Brno Municipal Museum

Research facilities: FFA BUT Department of Art History and Theory

Use of the work and its transfer into practice: The research of Jana Kořínková from the Department of Art History and Theory at the FFA BUT and Dagmar Černoušková from the Brno Municipal Museum, dedicated to the activities of the founding figure of world modern architecture Adolf Loos, found direct application in practice in the formulation of the conditions of the public tender for the complete reconstruction and new use of the director's villa of the former sugar refinery in Hrušovany u Brna. After the renovation, the building will be used as the Adolf Loos Cultural Centre, due to open in 2026. The results of the author's research on the work of Adolf Loos for the industrialist Viktor Bauer Jr. contributed significantly to the preparation of the competition and the subsequent implementation of the project. Jana Kořínková was also appointed to the advisory body overseeing the reconstruction process and is currently involved in the design of the museum's permanent exhibition. The cultural centre will serve a wide domestic and international audience and is an example of the direct social impact of basic research.

Methods for the transfer of the results of point 3) into practice:

- **Publication of expert studies and guides:** Research findings are incorporated into publications on architecture, cultural heritage, and history for professionals and the general public.
- **Educational programs:** Seminars and workshops for architects, designers, and art historians introduce Adolf Loos' work and its social significance, including training on historic building restoration.
- **Licensing of the Adolf Loos Cultural Centre Project:** The reconstruction model and exhibition concept based on an expert study by Jana Kořínková and Dagmar Černoušková (Eadem. „Das Haus ist viel zu groß ... Innen ist nichts zu holen“ – Die Adolf Loos-Villa des Direktors der Rohrbacher Zuckerraffinerie. In: *ÖZKD – Österreichische Zeitschrift für Kunst und Denkmalpflege* LXXVI, 2022, Nr. 1, s. 113–129. ISSN: 0029-9626) can be licensed for use in similar heritage conservation projects.
- **Tourism services and partnerships:** From 2026, thematic excursions and professional events at the cultural centre will attract domestic and international visitors, supported by partnerships with tourism agencies and cultural organizations.
- **Digital content and consultancy services:** Virtual tours, educational videos, and digital archives will be monetized, while consultancy services will be offered for heritage restoration projects.

This approach ensures **the effective transfer of research results into practice** and strengthens **interdisciplinary collaboration in cultural heritage preservation**.

4) Commercial sector and creative industries

Result name: RIV R (software)/Software THX – anonymous data sharing system **Key output of the project**

Research facilities: FFA BUT Department of Audiovisual Technology

Use of the work and its transfer into practice: THX – anonymous data sharing system is an important result of the project Decentralized Collection, Analysis, Visualization and Interpretation of Large Data in Artistic Practice, supported by the Technology Agency of the Czech Republic through the ÉTA programme (2018–2021). The @thx/chat chat application implements a protocol for decentralised communication, data collection and sharing, thereby enhancing user privacy and autonomy in digital environments. Through end-to-end encryption and minimization of the server role, the application ensures secure and transparent communication. Data analysis takes place directly on user devices and results can be shared in dynamic visualizations within closed communication threads. The software

finds application among professionals, researchers, educational institutions and the general public, and supports collaboration, digital literacy and informed decision-making. With its democratic data governance model and sustainable technology architecture, THX software has the potential for international dissemination and is an innovative tool to address current challenges in data security and information management.

Methods for the transfer of the results of point 4) into practice:

- **Licensing and software sales:** From the outset, it was envisaged that the projects would be developed as a non-commercial instrument to facilitate navigation of the digital environment for the general user. This instrument was intended to present an alternative to the prevailing client-server services, with a focus on user privacy and security. Furthermore, it was anticipated that this instrument would assume a significant proportion of the computational responsibility and load, i.e. hardware-related tasks.
- **Grant support and institutional partnerships:** The project received support from the Technology Agency of the Czech Republic within the ÉTA programme and was conceptualised as an interdisciplinary collaboration between the fields of ICT and visual arts. This initiative took the form of interfaculty cooperation between the Faculty of Fine Arts and the Faculty of Informatics of Brno University of Technology.
- **Workshops and consultancy services:** Following the termination of TA CR support, the project faces significant challenges in its development at domestic institutions, primarily due to the absence of adequate infrastructure and institutional support for interdisciplinary initiatives. In order to ensure the continuation and successful development of the project, alternative models of sustainability must be explored.
- **Online distribution and business partnerships:** The project's outputs and their corresponding documentation are available for consultation via the following online platforms: the project [website](#), the [GitHub repository](#) and the FFA [website](#)
- **International expansion and open-source development:** In the contemporary digital and online milieu, the establishment of trust is currently possible through three distinct avenues. These are: long-term and continuous action, digital signatures and open-source access. The first method is only achievable over time, the second is both costly and technical, and thus more suited to larger businesses, and the third method is the only one that is user-oriented. Consequently, in terms of the nature of the project, its outputs are conceived as open source and also aspire to a long-term continuous activity approach.

This strategy ensures both the **practical application of research and its sustainable dissemination** in the field of **digital security and technological innovation**.

Table 3.5.1 – Summary of non-public revenues received during the period under evaluation

Type of revenue	Revenue (in thousands CZK/EUR)									
	2019		2020		2021		2022		2023	
	CZK	EUR	CZK	EUR	CZK	EUR	CZK	EUR	CZK	EUR
License sales					8	0,326	2	0,070	1	0,049
Additional activities (Start-up)	735	28,994	725	28,608	796	31,401	592	23,360	730	28,806
Educational courses	234	9,233	271	10,701	333	13,142	334	13,173	526	20,736
Donations					60	2,370				
Total	969	38,227	996	39,309	1197	47,239	928	36,603	1257	49,591

Note: Enter funds raised for R&D&I from non-public sources besides grants or contract research (e.g. licences sold, spin-off company revenues, donations, etc.) in the calendar year.

POPULARIZATION OF VAVAI

3.6 The most important activities in the field of popularization of R&D&I and communication with the public

The evaluated unit shall briefly describe its main activities related to the popularisation of R&D&I and communication with the public (e.g. popularisation lectures, citizen science initiatives, etc.) during the period of 2019–2023 and provide up to 10 examples that it considers the most significant.

Maximum 500 words plus 200 words for each example given.

Self-assessment:

FFA strongly emphasises popularizing the results of creative outputs of research, artistic and design activities. [FFA's Gallery](#) is a platform for presenting current trends in artistic creation and artistic research. FFA continuously develops [its publishing activities](#), especially in the fields of art and art sciences. The publication activities of its students and teachers are supported by internal grants and also by acting as a co-publisher. In the past years, publications of FFA academics and PhD students published in cooperation with the publishing house Paseka, Centre for Contemporary Art Prague, tranzit.cz or Display have been supported in this way.

In cooperation with cultural organisations and institutions such as [TIC](#), the [Brno House of Arts](#), [4AM/Forum for architecture and media](#), [Jaroslav Fragner Gallery](#), [Day of Architecture](#), [Open House](#), [ERA21 magazine](#) or the [Czech Architecture Foundation](#), members of the FFA academic community contribute to the popularisation of knowledge in the field of architectural and artistic modernism (Jana Kořínková on the work of Adolf Loos, Ladislav Jackson on the work of Josef Polívka) and socialist modernity. They do this by giving guided walks and tours, lectures and presentations to the public, appearing in the media or contributing to professional-popularizing publications such as the [Brno Architectural Manual](#). Popularization activities occasionally move into the advocacy or activist position, aiming to save cultural heritage or at least minimize the damage caused by incompetent decisions of private owners or public administration (e.g. Šárka Svobodová's activities aimed at saving Brno buildings built during the period of state socialism).

Members of the FFA academic community are (co-)organisers of festivals of national and international importance. Martin Mazanec is the programme manager of [the PAF International Animation Film Festival](#) in Olomouc. Lenka Klodová is the organizer of [the Festival of Naked Forms](#) (FNAF), which is an internationally significant event in the field of performance art. Other festivals, organized by FFA staff and alumni, with significant popularization potential are [Sonda Festival](#), [Trychtýř Festival](#) and [festival Faun](#), which present innovative approaches and results in sound art, multimedia performances and environmentally oriented works of art. Since 2023, FFA has been organising the [LEKTVAR festival](#) themed around student games, which is aimed as much at potential applicants, lay people interested in games, as it is at professionals from the creative industries.

FFA cooperates with the [Centre for New Media Arts – Vasulka Kitchen Brno](#) and thus participates in popularising research focused on the work of electronic art pioneers Woody and Steina Vasulka, as well as the topic of connecting art and technology in general. Vasulka Kitchen Brno is one of the few specialised projects in the Czech Republic today that connects the academic and non-academic spheres and is part of an international network of institutions focused on archiving, interdisciplinary research and promotion of creation in the field of new media art and the moving image. FFA also regularly participates in the Masaryk University project called [Brno Art Week](#) and supports the Open Studios project initiated by FFA graduates, which introduces the general public to the environment of Brno studios and studios. Either on its own or in cooperation with Brno galleries and the [KUMST](#)

creative centre, FFA organises workshops and lectures open to the general professional and general public. FFA also organises [conferences](#), which address current topics not only to the professional community but also to the wider public. Starting in 2023, as part of a growing emphasis on keeping alumni ties alive, the faculty hosts Rooted Everywhere, a week-long symposium that connects the faculty and alumni and culminates in a public exhibition.

Examples of the ten most important activities in the field of R&D&I popularisation and communication with the general public from 2019–2023:

1) International Conferences at FFA BUT

From 2019 to 2023, FFA hosted several notable conferences and symposia with international participation to foster collaboration and knowledge sharing, while also addressing critical societal issues. [Datatata.info](#) (April 2019) explored the impact of data collection and interpretation on artistic practice, covering topics from machine learning to critical data aesthetics. The proceedings from this conference were published by FFA. [Queering Czech History](#) co-organized by FFA and the Society for Queer Memory of the Institute of Economic and Social History at the Faculty of Arts, Charles University (November 2019) addressed queer history in East-Central Europe, examining heteronormative structures and gender stereotypes through interdisciplinary historical research. [Synthesizing Knowledge: Methodologies, Epistemologies, Worlds](#) (December 2022) explored research methodologies with world-building capacities, emphasizing interdisciplinary, collaborative, and socially engaged approaches to knowledge production. [Re-Reading the Contemporary Press: Constructing Art, Architecture and Social Histories](#) (November 2023) dealt with queer history in the Czech Lands in Central European and international context, showcasing approaches to historical research, which endeavour to critically analyse heteronormative structures in society and stereotypes in thinking, related to the bipolar image of gender and biological sex, using the selection of topics and applied methods.

2) FFA Publishing

FFA's [Publishing](#) plays a vital role in disseminating the knowledge generated by its staff and students, ensuring that the results of their research are made accessible to a broad public audience. FFA publishes a diverse range of peer-reviewed works, including monographs on the history and theory of art, design, and architecture, as well as artistic and design research, artbooks, experimental student publications, and audio recordings. These publications are produced both independently and in collaboration with national and international partners. FFA's [Editorial Board](#) plays a crucial role in maintaining the quality, strategic direction, and coordination of these efforts, overseeing and approving the annual [Editorial Plan](#). Over recent years, FFA has increasingly published books in English, which have attracted significant academic and public interest. These books are distributed internationally with the assistance of European co-publishers and their established global distribution networks. FFA publications are widely available in libraries and bookstores across the Czech Republic, Europe, and beyond, and they are regularly showcased at book fairs, further extending their reach to both academic and non-academic audiences. Notable recent successes include the collective monograph [Synthetic Becoming](#), which received highly positive reviews in Czech, English, and French and quickly sold out internationally. [Háček + Čárka](#) and [České spotřební pohádky](#) by Pavel Ryška have also gained significant attention, enjoying both commercial success and critical acclaim.

3) Galerie FaVU

[Galerie FaVU](#) (FFA Gallery) is an interdisciplinary space for professional presentations of the most talented students and graduates from Czech and Central European art schools. The gallery is dedicated to artists and curators in the field of visual, audiovisual and sound creation, responding to current social issues. The concept of the exhibition projects is not predefined thematically or in terms of

media; the criterion is the quality of the projects, set in the context of the space and time. The dramaturgy of exhibitions is determined by a gallery board composed of faculty teachers and external experts, which, on the basis of an annual open call, usually selects the seven best exhibition or curatorial projects. The mission of the FFA Gallery is primarily to support excellent projects of the younger generation of artists and curators, their promotion and open dialogue with the public, the cultural scene of Brno, the South Moravian Region and our society as a whole. The gallery was founded in 2004 by the former dean of the faculty, doc. Petr Spielmann, PhD., dr.h.c., and started its activities with an exhibition of the legend of world video art Woody Vasulka. Over the two decades of its existence, the FFA Gallery has become an important part of the exhibition and gallery scene in Brno. The gallery's exhibition programme is also made possible thanks to the support of expert committees and subsidy programmes of the Statutory City of Brno and the Ministry of Culture of the Czech Republic. <https://www.favu.vut.cz/en/ffa-gallery>

4) New Media Art Centre – Vašulka Kitchen Brno

Part of the popularization activities related to the work of [the Vašulkas](#) and also to the area of connecting art and technology in general was, for example, the Art-Research Bridge project, in which students and teachers of the FFA BUT in Brno and the School of Humanities at the University of Iceland in Reykjavik collaborated, as well as regular participation of members of the FFA academic community in international symposia devoted to the preservation of electronic art (e.g. [Art Collections of the Digital Age in the Gallery and Museum Vasulka Reloaded](#) symposium) and participation in exhibition projects appreciated by the professional community (Sums & Differences, Open Digital Archive and Test Lab for Live Audiences). Members of the FFA are also implementing a project to process the archive and collection of the Vašulka Kitchen Brno into a structured public [database](#) that provides access to unique materials for researchers and those interested in the work and life of the Vašulkas, as well as the work of other new media artists from Central Europe.

<https://vasulkakitchen.org/en>

5) HUMAIN – Platform for connecting the professional community and for popularizing research in AI

The [HUMAIN platform](#), established within the framework of the research project [Development of the HUMAIN Project Activities and Exploratory Research for the Dissertation](#) (the main researcher was a PhD student of FFA Alina Matějová), is dedicated to the popularization of AI knowledge. HUMAIN is the first platform in the Czecho-Slovak environment that systematically explores the intersections between artificial intelligence, art, design and the humanities. Interdisciplinary international conferences are the platform for presenting research results to the public: the first two took place in 2020 and 2021 at Industra Brno, and the third in 2022 at KUMST Brno. The conference was complemented by an accompanying programme contributing to the popularisation of the research itself and its communication to the professional and lay public. In 2020–2022, the conference programme was supported by an exhibition, the publication of a scientific publication in collaboration with Flow Publishing House (MUNI Brno), as well as further internal research *Mapping AI Communities and Practices*, which aimed to identify the needs of the local scene related to the topic of artificial intelligence. In 2023, a series of workshops was organised as an accompanying programme of the professional conference, focusing on the use of artificial intelligence in literature, music and visual arts. The HUMAIN platform was behind the creation of the open platform *Brno.AI*, which creates a space for collaboration between AI experts and helps to develop a local and international community interested in the topic of AI. In 2022, this platform launched a nationwide festival [Days of AI](#), which is open to specialists and companies, as well as teachers and students at universities, secondary and primary schools.

<https://humain.space/>

6) Lektvar – a festival of student games

The Lektvar Festival was initiated by tutors and students from the Game Media Studio at FFA and is the first local festival that aims to place student games in the broader context of the art scene and creative industries. The festival organisers see student work as an ideal set for examining the current and future role of games and game principles. The first edition of the festival introduced the theme of colour across the full spectrum of its use, both in original and general game development and illustration. The intention of the festival is to connect applicants with graduates of FFA, and in the long term to build a platform aimed at mapping and presenting student game creation in the Czech Republic and abroad. The activities of the festival take place both at the faculty and in the public space of the creative hub KUMST in Brno. The festival is thus open to the public, takes advantage of the strong presence of the creative or game industries in Brno and is thus also a platform for establishing and maintaining relationships with the professional sphere.

<https://festivalektvar.cz/>

7) Intermedia festivals: Sonda, Trychtýř and Faun

Sonda, Trychtýř and Faun festivals are organized in cooperation with the non-profit sector, for example with the Svitava– transmedia art lab. These projects initiated by Jiří Suchánek (FFA Department of Audiovisual Technology) and Japanologist and music dramaturge Jan Lichý appeal to a wide range of professional and lay audiences. They also include educational activities for students of FFA and other Brno universities with an artistic focus. The Sonda Festival is a platform focused on audiovisual and electroacoustic art. In an exceptional environment (Brno Observatory and Planetarium) it presents world-leading artists and their innovative approaches. The event, enriched with educational workshops, connects the professional scene with the general public and inspires new generations of artists. The Trychtýř Project supports the collaboration of artists and technologists in the creation of multimedia works, whose outputs are subsequently presented at the festival, raising awareness of new media art. By involving foreign partners, the project strengthens the international prestige of Brno as a centre of innovative culture. The Faun Festival focuses on sound experiments and genre intersections, combining electronic music with traditional forms. These projects bring quality intermedia art, contribute to the promotion of innovative forms of education in the field of contemporary sound, visual and performance art and its popularisation, and enrich the cultural scene in Brno with a significant international reach.

8) Beautiful Work

As one of the partners, FFA was involved in the project Forum Krásná práce / Beautiful Work Forum, whose ambition was to create and continue to develop a functional platform supporting the professionalization and development of individuals and entities working in the field of living traditional crafts and their connection with the current design scene, with special attention to strengthening their competencies in marketing and sales. The output of the project is a web application in the form of a social network: <https://www.krasnaprace.org/>. In this user-friendly virtual environment, master craftsmen meet the emerging design generation, with whom they share their stories and family traditions. Both groups exchange experiences and present their products to the general public. This platform also connects them with tourism operators, which contributes to popularising folk traditions in relation to contemporary product design at international level. The project has also created a collection of design objects created in cooperation between students of product design and bearers of traditional crafts, which will be presented in 2023, among others, at the Czech Centre in New York.

9) Popularization and advocacy activities aimed at the recognition and protection of tangible cultural heritage in the field of architecture and art in public space

Activities aimed at popularizing knowledge in the field of modern and contemporary architecture and art in public space have been continuously developed at the FFA since the beginning of the last

decade. FFA's staff conceive and professionally guarantee documentation and popularization projects such as architectural manuals of Czech cities with the perspective of linking to similar projects abroad ([Brno Architecture Manual](#), [Hradec Králové Architecture Manual](#), [Tišnov Architecture Manual](#)), contribute to them and participate in the programme of the national festival [Architecture Day](#) popularizing the field through guided walks, lectures and workshops.

Ladislav Jackson has been an appointed an expert consultant for the restoration of the 1024 Villa Čerych in Česká Skalice; he was also a member of the Committee for the Regeneration Programme of the urban conservation area and the urban conservation zone and urban monuments in Hradec Králové. In connection with her research focus on the work of Adolf Loos, Jana Kořínková focuses on making Loos' work accessible to the general public. On the basis of her study, the reconstruction of the villa that Adolf Loos designed for the director of the sugar factory in Hrušovany u Brna is currently underway, where, according to the author's concept, the Adolf Loos Cultural Centre will be built. Šárka Svobodová collaborates on the research and lecture project Consonance of Modernism, which focuses on post-war architecture and its perception and evaluation in the present. Together with FFA member Barbora Šedivá, she has founded a new media platform that builds on a unique connection between theorists, artists and journalists: [the "City" column](#) which is part of the online newspaper Deník Referendum and the associated multimedia platform on the [4AM website](#) is based on an interdisciplinary approach relating contemporary architecture to its physical space, culture and politics. Markéta Žáčková, in addition to publishing expert texts on architecture and urbanism of the period of state socialism and the 1990s, is dedicated to the popularisation and implementation of these topics through participatory projects focused on the protection of cultural heritage and its current use. The project [Our Space – The White House](#) implemented in cooperation with the Centre for Central European Architecture, the Brno-Central City and TIC Brno, has brought about the revitalisation of the foreground of a significant modernist building on Žerotínovo Square in Brno (2023) and initiated participatory improvement of public space in other parts of the city.

10) FFA participation in exhibitions, educational and popularization activities of public institutions

Among the most significant results of cooperation with institutions such as the National Heritage Institute, the Moravian Library or the Tourist Information Centre of Brno is the creation of the visual style of their projects, exhibitions and graphic design of publications. In 2021, a travelling exhibition *Vzpomínky na černobílý svět: Afričané v habsburské monarchii (Memories of a Black and White World: Africans in the Habsburg Monarchy)* was held as part of the National Heritage Institute's [Year of Enlightenment Nobility](#) project recalling the fate of Africans who served the Habsburg aristocracy from the Baroque period onwards in our territory. Focusing on the personality of Angelo Soliman, the scholarly African of the Princes of Liechtenstein, whose abilities brought him to the top of Viennese Enlightenment society, the exhibition project reminded us that it was during the Enlightenment that seemingly modern themes such as freedom, civil rights and racism emerged, influencing our society in a fundamental way up to the present day. The visual style of this large-scale project, presented throughout the Czech Republic in state castles managed by the National Heritage Institute, and its advertising campaign were created by students of the Graphic Design Studio 1 Jakub Polách and Petr Škobrtal. Another important outcome of this cooperation is the book [Tváře osvícenství \(Faces of Enlightenment\)](#) which was shortlisted for the national competition for the Most Beautiful Czech Book of 2021 in the category of specialist literature. Both authors also contributed significantly to the creation of the TIC Brno exhibition titled [Ohnivý kůň a drak \(The Fire Horse and the Dragon\)](#) which was opened to the public in the spring of 2023.

IMPLEMENTATION OF RECOMMENDATIONS

3.7 Implementation of the recommendations in Module 3

The evaluated unit will briefly describe how it has implemented the recommendations for Module 3 from the previous evaluation period, if applicable.

Maximum 1000 words.

Self-assessment:

The recommendations of the International Evaluation Panel (IEP) were mainly related to the areas in which the faculty did not report any activity during the evaluation period 2014–2018, with the justification that these were not areas of interest relevant to its artistic profile. In the other criteria assessed in Module 3, the faculty achieved an above average rating of 4 (Very good). The areas that the faculty did not address in this period were mainly related to zero applied and contract research and creative activity with a so-called relevant impact on society.

The faculty received the following general recommendation:

“The criteria assessed in M3 are considered less relevant for research areas falling under the category of humanities and arts. However, the Faculty has sufficient scope within the wider structure of a technical university to develop these activities. We therefore recommend that the FFA make a special effort to work with other parts of the University to achieve this long-term aim.”

In the current evaluation period (2019–2023), FFA has multiplied its efforts to increase its budget from applied and contract research projects and has established collaborations with important socially relevant actors, such as the [Masaryk Memorial Cancer Institute](#) in Brno (MOÚ) or the National Heritage Institute (NPÚ) (more info in section 3.5.). To achieve improvements, FFA has adopted significant structural organizational changes, establishing supporting departments: the [Project Support Office](#) and the [Office for Creative and Educational Activities](#), and above all, the [Research Centre](#), in order to expand research capacity in art and design and to strengthen FFA's cooperation with practice and other research organisations. Another step was the changes in the educational profile of the faculty and the establishment of a new study programme in Design-oriented practice.

In the period under evaluation (2019–2023), the [Research Centre](#) performed contract research projects (MOÚ, NPÚ) or projects supported by the Ministry of Labour and Social Affairs (MPSV), the Ministry of Culture (MoC), and the Technology Agency of the Czech Republic (TA ČR), among others. All of these projects are interdisciplinary in nature and are implemented in cooperation with other partners (e.g., the Museum of Romani Culture in Brno, the Faculty of Education at Masaryk University in Brno, IQ Roma Servis).

The latest project obtained so far within the Centre is funded by the SIGMA Programme for Support of Applied Research and Innovation – Sub-objective 3 – Supporting the Innovative Potential of Social Sciences, Humanities and Arts. Out of 379 submitted projects, 64 applications received support, and the FFA BUT project entitled “[Educational Computer Game about the Roma Position in Society](#)” took [first place in this public competition](#). The highly socially relevant project, which will be implemented over the next three years, aims to formally and substantively expand existing educational materials for the second level of primary education. The project will confront the currently prevalent use of sandbox games or text-based or point-and-click adventure games with a comprehensive approach to the development of game mechanics, using current knowledge in the field of serious games, game rhetoric and ludology in general. Both the content and the formal design envisage the continuous involvement of the actors concerned –the Roma, learners, educators and relevant professional

organizations– to ensure, on the one hand, the applicability of the game in the educational process and, on the other, the creation of a communicative space for authentic Roma expression.

Another socially highly relevant project supported by the Ministry of Labour and Social Affairs (MLSA) through the Operational Programme Employment Plus is [“Client-Oriented Data”](#). It involves the development of a new application that aims to link the needs of social service providers with better use and transparent sharing of client data. The project builds on previous faculty research activities and relies on participatory collaboration of all parties involved – clients, social workers, methodological experts or donors. In addition to more effective management of interventions and communication with clients, it is also envisaged to reduce digital exclusion, as the application will allow users to understand their own records better and actively participate in the resolution of their difficult life situations. The newly developed software has the ambition to contribute to a broader promotion of client-oriented practices and to strengthen collaboration between NGOs and professional partners in the field of social innovation.

Another structural step the faculty took to strengthen research activities was the creation of [post-doc and post-mag programmes](#), which employ (usually for one year) artists and researchers with their own creative research projects that have an interdisciplinary character and social impact. Since the launch of the post-doc and post-mag programs [9 researchers have been supported and engaged](#), including the artists and scientists from abroad.

In addition to these inter-university collaborations on research projects, FFA established cooperation in particular with the Faculty of Information Technology as part of the Design degree programme with a focus on game design and the creative game industry. Several companies have been founded by and with FFA’s graduates and have become respected entities in the game industry in the Czech Republic; the first faculty spin-off company in this area is currently being established. The faculty is also an active member of the [Game Cluster in Brno](#) and co-founded the [Association of Faculties in Audiovisual](#) which played an important role in the drafting of the amendment to the Audiovisual Act, newly covering also the area of support for the game industry. The faculty is also cooperating with the Institute of Design of the Faculty of Mechanical Engineering from 2020 onwards in the framework of doctoral studies covering the field of industrial design.

Within the framework of the recommendations, the faculty also successfully focused on attracting inter-faculty cooperation projects, e.g. with the Faculty of Electrical Engineering and Communication and the Faculty of Architecture, addressed within doctoral projects of inter-faculty specific research during the evaluation period.

In addition, the FFA is an active partner of the new innovation and creative centre [TAH – Centre for Innovations in Technology, Art and Humanities](#), which supports interdisciplinary collaboration between new technologies, art, design and humanities and social sciences across the Czech Republic. This activity is entirely in line with the general philosophy of the faculty, which believes in bringing together different disciplines and expertise as a path to more innovative solutions to societal challenges. TAH brings together nearly thirty research institutions including universities, institutes of the Czech Academy of Sciences, art colleges, institutes of technology and specialized humanities and social science-oriented faculties. Its core mission is to bring new connections between knowledge and innovation that would otherwise remain beyond the reach of traditional disciplines and standard grant opportunities.

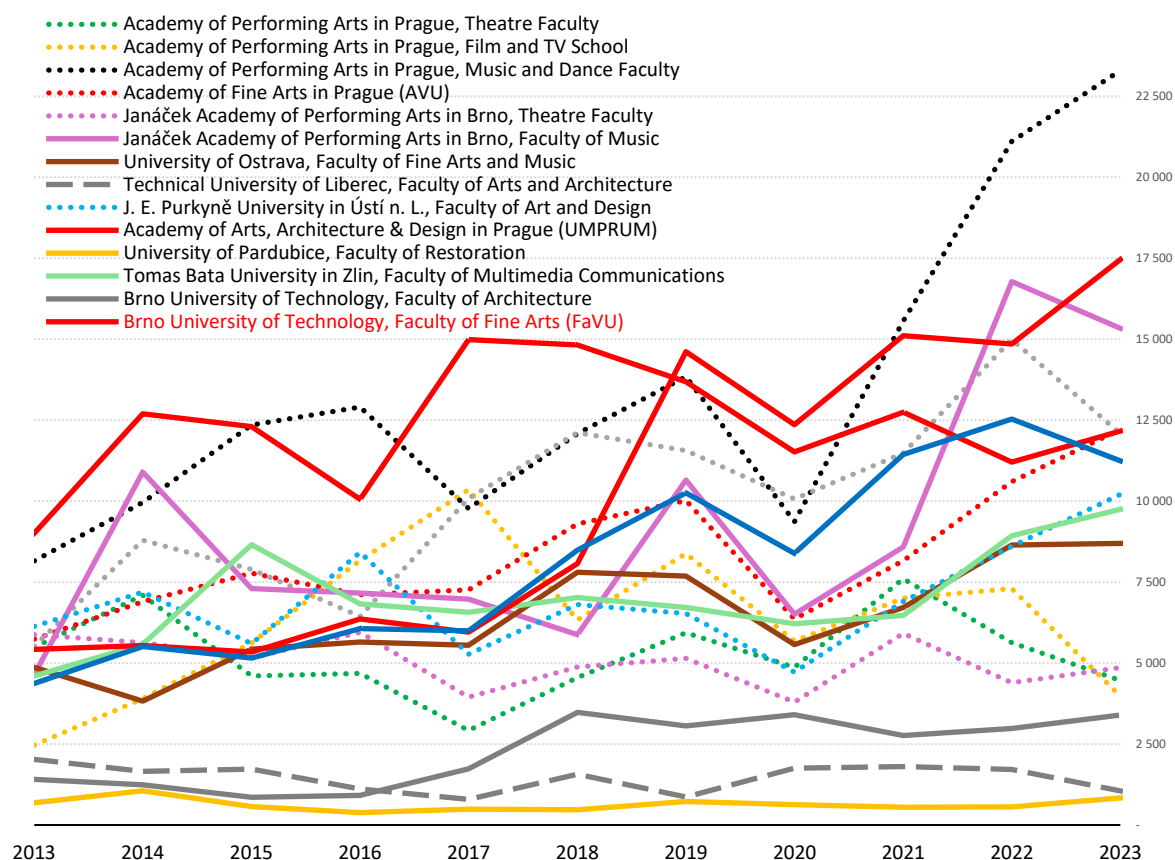
During the evaluation period, the FFA achieved significant improvement in the area of artistic outputs with international impact, positioning itself among the most visible Art HEIs in the Czech Republic, as most clearly demonstrated by the following tables and charts:

Comparison of Leading Art HEIs Reporting Artistic Research Outputs (Two Evaluated Five-Year Periods and Percentage Change Between Them)

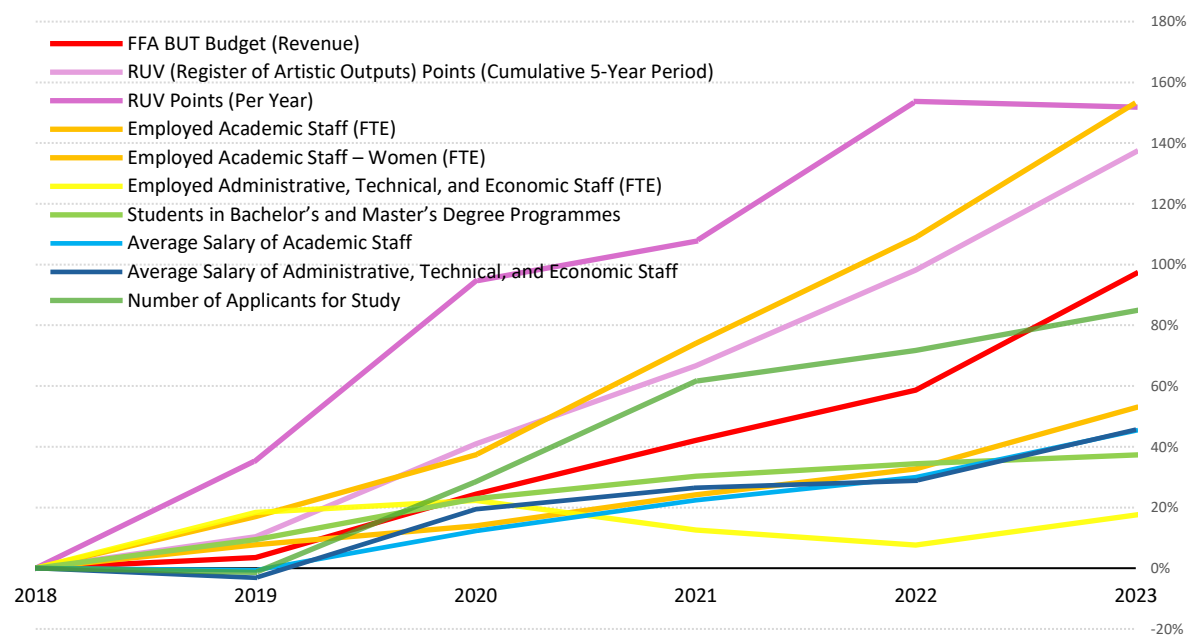
Institution	RUV points over a five-year period		
	2014–2018	2019–2023	% change
Academy of Performing Arts in Prague, Music and Dance Faculty	57,070	83,172	46%
Brno University of Technology, Faculty of Fine Arts	31,264	74,403	<u>138%</u>
Academy of Arts Architecture & Design in Prague (UMPRUM)	64,873	61,333	-5%
Janáček Academy of Performing Arts in Brno, Faculty of Music	38,219	57,867	51%
University of West Bohemia, Sutnar Faculty	31,205	53,864	73%
Academy of Fine Arts in Prague (AVU)	38,339	47,353	24%
Tomas Bata University in Zlin, Faculty of Multimedia Communications	34,659	38,083	10%
University of Ostrava, Faculty of Fine Arts and Music	28,260	37,323	32%
J. E. Purkyně University in Ústí nad Labem, Faculty of Art and Design	33,285	36,965	11%
Academy of Performing Arts in Prague, Film and TV School	34,360	32,347	-6%
Academy of Performing Arts in Prague, Theatre Faculty	23,843	28,510	20%
Janáček Academy of Performing Arts in Brno, Theatre Faculty	25,571	24,108	-6%
Technical University of Liberec, Faculty of Arts and Architecture	6,848	7,191	5%
University of Pardubice, Faculty of Restoration	2,972	3,293	11%

FFA Artistic Performance in the Evaluated Period (for a detailed comparison, see:

<https://tinyurl.com/FFA-RUV-Points>)



FFA BUT Trends in the Evaluated Period (for more information and parameters, see: <https://tinyurl.com/FFA-Trends>)



A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)
FFA BUT Organigram	3.1	https://tinyurl.com/FFA-Organigram
FFA BUT Notice Board	3.1	https://www.favu.vut.cz/en/faculty/board
FFA BUT Mission Statement	3.1	https://www.favu.vut.cz/en/faculty/mission
FFA BUT Trends	3.1 – 3.7	https://tinyurl.com/FFA-Trends
FFA BUT Quality Assessment	3.1 – 3.7	https://www.favu.vut.cz/en/faculty/quality-assessment
FFA BUT Artistic Performance	3.1 – 3.7	https://tinyurl.com/FFA-RUV-Points
FFA BUT Success Rate of Applicants	3.1–3.7	https://www.favu.vut.cz/en/faculty/quality-assessment#vyberovost
National Register of Artistic Outputs (RUV)	3.2	https://www.favu.vut.cz/en/intraportal
<i>Journal of Historical Sociology, Sociology Lens</i> . ISSN: 2832-5796	3.2.2	https://onlinelibrary.wiley.com/page/journal/2832580x/homepage/editorialboard.html
<i>Notebook for Art, Theory and Related Zones</i> . ISSN: 1802-8918	3.2.2	https://vvp.avu.cz/en/redakcni-rada/
<i>Umění/Art</i> , Institute of Art History, Czech Academy of Sciences, Prague, ISSN: 0049-5123	3.2.2	https://www.umeni-art.cz/cz/about-us/redakcni-rada-2Zl70R
<i>Bulletin of the Moravian Gallery in Brno</i> . ISSN: 0231-5793	3.2.2	https://old.moravska-galerie.cz/moravska-galerie/o-galerii/bulletin-mg.aspx
<i>Construction. A Magazine for Those Who Enjoy Building and Architecture</i> . ISSN: 3029-5130.	3.2.2	https://www.stavbaweb.cz/category/casopis-stavba/
<i>Red Thread e-journal</i>	3.2.2	https://red-thread.org/
Institute of Forensic Interdisciplinary Research, Design and Architecture for Social Emancipation (2020–2022)	3.3	https://www.vut.cz/en/rad/projects/detail/31482
Serious Educational Game about Roma Position in Society (2023–2026)	3.3	https://www.vut.cz/en/rad/projects/detail/34766
Decentralized Collection, Analysis, Visualization and Interpretation of Large Data in an Artistic Practice (2018–2021)	3.3	https://www.favu.vut.cz/en/rad/projects/detail/2920
Searching for the Šlapanická Faith: Chrysanthemums, Community, Rituals, Memory (2021–2022)	3.3	https://www.favu.vut.cz/en/rad/projects/detail/32988 ; https://www.favu.vut.cz/en/publishing/publications-f147703/hledani-slapanicke-viry-spolecenstvi-ritualy-pamet-searching-for-the-faith-in-slapanice-community-rituals-memory-d265526 ; https://www.favu.vut.cz/en/rad/projects/detail/34981
Archive of Radek Pilař (2023)	3.3	https://www.favu.vut.cz/en/rad/projects/detail/34492 ; https://radek-pilar.cz/
Matter – Centre for Recycling and Upcycling at the Faculty of FFA of BUT (2021–2023)	3.3	https://www.favu.vut.cz/en/rad/projects/detail/32653
Self-organization as an Imagination Source for Post-anthropocenic Landscape. An Artistic Research project (2021–2022)	3.3	https://www.favu.vut.cz/en/rad/projects/detail/32662
Development of the HUMAIN Project Activities and Exploratory Research for the Dissertation (2021–2022)	3.3	https://www.favu.vut.cz/en/rad/projects/detail/32986
La Contextressa (2020–2021)	3.3	https://www.favu.vut.cz/en/rad/projects/detail/31891
Client-oriented Data (2023–2024)	3.3	https://www.favu.vut.cz/en/rad/projects/detail/34849

Výsledek RIV B (odborná kniha): JAMRICOVÁ, Kristína – KOZERAWSKI, Denis – MÁCHA, Jakub – MENŠÍKOVÁ, Barbora – MOHYLA, Ondřej – NOVOTNÝ, Roman – RŮŽIČKOVÁ, Martina – ZÁLEŠÁK, Michal. Mesto pre všetkých? Odkrývanie infraštruktúry segregácie. 1. vyd. Brno: FaVU VUT, 2022. 288 s. ISBN: 978-80-214-6075-1.	3.4	https://www.favu.vut.cz/en/publishing/publications-f147703/mesto-pre-vsetkych-odkrývanie-infraštruktúry-segregacie-city-for-all-uncovering-the-infrastructure-of-segregation-d265530
Care from the Future card game published by FFA BUT, 500 copies, distributed with the publication Mesto pre všetkých? Odkrývanie infraštruktúry segregácie	3.4	https://www.favu.vut.cz/utc/publikace/detail/182439
Educational computer game about Roma position in society	3.4	https://old.starfos.tacr.cz/en/project/TQ01000081
Methodology for the educational computer game about Roma position in society	3.4	https://old.starfos.tacr.cz/en/project/TQ01000081
Record-keeping tool for social services with a client interface	3.4	https://www.favu.vut.cz/en/rad/projects/detail/34849
Software THX – Anonymous Data Sharing System Key Output of the Project	3.4	https://www.favu.vut.cz/en/rad/projects/detail/29206 ; https://www.favu.vut.cz/vav/vysledky/detail/170834 ; https://thx.ffa.vutbr.cz/en-US/hello
Matter – Recycling and Upcycling Centre	3.4	https://matter.favu.vut.cz/
Archive of Radek Radek Pilař: An electronic catalogue of the works of the pioneer of intermedia art in Czechoslovakia	3.4	https://radek-pilar.cz/
Guerillas with a Hoe – Spontaneous Gardening in the Public Space: walking tour and audio guide	3.4	https://www.favu.vut.cz/en/rad/projects/detail/34981
Research into the activities of architect Adolf Loos: Defining the conditions for the public tender for the Adolf Loos Culture Centre in the director's villa of the former sugar refinery in Hrušovany u Brna	3.4	https://www.vut.cz/en/people/jana-korinkova-141764/publikace#navigace-vizitka ; https://www.vhodne-uverejneni.cz/zakazka/v-00668-obnova-a-nove-vyuziti-vily-reditele-byvale-cukerni-rafinerie-v-hrusovanech-u-brna-pro-kulturni-centrum-adolfa-loose-vyber-projektanta ; https://www.bda.gv.at/dam/jcr:459dad30-04c0-4eb4-a20f-322122725b72/OEZKD_2022_Heft_1_ebook.pdf ; https://www.irozhlaz.cz/zivotni-styl/spolecnost/adolf-loos-vila-rekonstrukce-hrusovany-u-brna_2310252315_tlp
Department of 3D Technology, Department of Audiovisual Technology, etc.	3.5	https://www.favu.vut.cz/en/facilities
PAF international festival of animation	3.6	https://pifpaf.cz/en/
Festival of Naked Forms	3.6	https://www.artmap.cz/nahota-jako-oslava-10-rocnik-festivalu-nahych-forem/
FFA Conferences	3.6	https://www.favu.vut.cz/en/rad/conferences
International Conference Focused on Data and Fine Art organised by the Faculty of Fine Arts of Brno University of Technology	3.6	https://datatata.info/conference/info
Queering Czech History Conference	3.6	https://queeringczechhistory.wordpress.com/
Synthesizing Knowledge: Methodologies, Epistemologies, Worlds. Symposium on interdisciplinary, collective, reflexive, affective, and socially engaged research in art, design, humanities, and social sciences	3.6	https://www.favu.vut.cz/en/ffa-news-f26745/symposium-unconference-synthesizing-knowledge-with-an-open-program-of-short-keynotes-5-7-dec-2022-d233848
Symposium Re-Reading the Contemporary Press: Constructing Art, Architecture and Social Histories, 23 Nov 2023	3.6	https://www.favu.vut.cz/en/f26745/d248547
FFA Publishing	3.6	https://www.favu.vut.cz/en/publishing

FFA Editorial Board	3.6	https://www.favu.vut.cz/en/faculty/structure/editorial-board
FFA Editorial Plan	3.6	https://www.favu.vut.cz/en/publishing/editorial-plan
FFA Gallery	3.6	https://www.favu.vut.cz/en/ffa-gallery
Center for New Media Art – Vašulka Kitchen Brno	3.6	https://vasulkakitchen.org/en
HUMAIN platform; Brno AI	3.6	https://humain.space/ ; https://www.brno.ai/en/about-us/
Development of the HUMAIN Project Activities and Exploratory Research for the Dissertation; Brno AI	3.6	https://www.favu.vut.cz/utc/projekty/detail/32986 ;
FESTIVAL LEKTVAR – festival of student game art	3.6	https://festivallektvar.cz/ ; https://festivallektvar.cz/archiv/2022/
Intermedia festivals: SONDA, Trychtýř and Faun	3.6	https://sondafestival.com/ ; https://www.favu.vut.cz/en/ffa-news-f26745/a-workshop-by-tadej-drolic-audio-reactive-visuals-11-nov-2022-11-00-17-00-d232481 ; https://svitava.org/project/trychtyr/ ; https://faunfestival.cz/festival/
Beautiful Work Forum	3.6	https://www.eeagrants.cz/cs/programy/kultura/schvale-ne-projekty/forum-krasna-prace--platforma-pro-posilo-3676 ; https://www.krasnaprace.org/ ;
Popularizing and advocacy activities aimed at exploration and protection of tangible cultural heritage in architecture and art in the public space	3.6	https://www.bam.brno.cz/en/ ; https://kam.hradcekrálovce.cz/en/clanek/405 ; https://www.tamtisnov.cz/menu/o-projektu ; https://www.denarchitektury.cz/en/ ;
FFA BUT collaboration on exhibitions, educational and popularizing activities by public institutions	3.6	https://www.npu.cz/cs/o-nas/projekty/temata/70300-rok-osvicenske-slechty ; https://sklepbrno.cz/en/o-expozici/

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED:

FACULTY OF INFORMATION TECHNOLOGY

FORD: 1 - Natural sciences

SOCIAL CONTRIBUTION OF THE EVALUATED UNIT

3.1 Introductory information about the unit under evaluation

The evaluated unit will describe its mission and vision and provide a general self-reflection of the societal contribution of R&D&I, along with its long-term goals in the fields it develops. The distribution of research activities by type of research will also be commented on.¹ The evaluated unit will describe its organisational structure and size (staffing, number of students, number of study programmes implemented, etc.) based on the data provided in annex tables 3.1.1 to 3.1.6.

Maximum 1000 words.

This is a non-rated indicator that serves as an introduction to the evaluated unit, providing context for data in indicators 3.2-3.7.

Self-assessment:

The vision of the Faculty of Information Technology (FIT) Brno University of Technology (BUT) is **to be a solid part of BUT** as a well-established university with a focus on information technology **and to use the opportunities of this dynamic field to contribute to the development of technology in the modern world.** We must be a leading force in the contemporary turbulent society and wisely direct exploitation of novel concepts, such as Artificial Intelligence (AI), and help in protection against threats, such as Deep Fakes. We will remain a friendly open-minded institution providing education, research, and service to the public, that is friendly to people as well as nature.

The FIT mission is to be outstanding in providing education, performing world-class research, offering knowledge to the industry and economy, serving to the public as well as in preserving knowledge. We deliver solid theoretical foundations in Bachelor, Master, and Doctoral levels of education, we dynamically react to the quickly changing world of information technology, and we update the courses and programs so that our graduates are well prepared for their lifetime professional experience. In research, we continue focusing the most challenging fields and at the same time addressing the most applicable results in industry. In service to society, we will emphasise the societal impact of information technology and emerging concepts in our field affecting the professional world and lives of the general public.

In accordance with its name, FIT in its activities cover the area of information technology (IT) following the more than 120 years tradition of BUT as a Czech speaking educational institution and over 20 year of FIT which, while being the youngest faculty of BUT, already gained a good reputation not only in education, valued by our graduates and industry, but also in research and

¹ Basic, applied, contract, artistic research (see Definition of Terms in Methodology HEI2025+).

other activities. According to the vision and mission and also with compliance to the Regional Innovation Strategy of the South Moravian Region that indicates IT as one of the four key economic sectors of the Region, FIT became a key player. IT is an important part of several areas of the National priorities of oriented research, experimental development, and innovations of the Czech Republic (areas such as safe society or knowledge-based competitive economy, including Industry 4.0). Of course, this is natural as IT and artificial intelligence (AI) are concepts of the future even on a global level.

FIT belongs to the Czech and, in several IT areas, also to the world leading organizations. The examples of such areas include speech and image processing, computer network security, knowledge technologies, evolutionary technologies, automated analysis and verification, computer vision and photography, as well as hardware-acceleration and high-performance or embedded computing. In these areas, FIT implemented several successful Czech, European projects and—which is uncommon in the Czech Republic—also contributed to U.S. projects (DARPA and IARPA). FIT has also successfully developed its contractual research with major technological companies, e.g., RedHat (<https://www.redhat.com/en>), Honeywell (<https://www.honeywell.com/us/en>), Škoda-Auto (<https://www.skoda-auto.cz>), NXP (<https://www.nxp.com>), etc. Graduates of FIT have established successful companies already being among global technological leaders, e.g. Cudasip (<https://cudasip.com>), Flowmon (nowadays Progress <https://www.progress.com/flowmon>), Phonexia (<https://www.phonexia.com>), CAMEA (<https://www.cameatechnology.com>), 3DIm (nowadays called TESCAN 3DIm <https://tescan3dim.com>), and recently BrnoLogic (nowadays called DYNANIC <https://dyna-nic.com/brnologic-becomes-dynanic/>), etc. At the same time, these companies continue to cooperate with FIT BUT, and we appreciate that solutions with economic potential and benefits to society (e.g. in safety and healthcare) have been created at FIT.

The achievements of FIT are reflected in international awards, participation in editorial boards of prestigious journals and in programme committees of top conferences as well as invitations for lectures renowned universities, companies, and conferences. The outstanding position of FIT was reflected in the recent (2024) international peer review evaluation (of 2019–2023 period) at the level of individual workplaces (institutes/departments), where all four evaluated departments of FIT achieved A results (A1-A2), and FIT achieved the best results of all the evaluated faculties of BUT.

From the internal structure point of view, FIT consists of 4 departments performing teaching and research: Department of Information Systems, Department of Intelligent Systems, Department of Computer Graphics and Multimedia, and Department of Computer Systems. Research projects of the departments are supported by Research Centre of Information Technology. FIT has also further administrative, support, and technical units (see also <https://www.fit.vut.cz/fit/structure/.en>).

In terms of size, FIT is a medium-size faculty at BUT, with ~2500 students (out of ~20 000 total students of BUT). The faculty has over 350 staff members consisting of academic staff, scientific and professional staff, and others (e.g. administrative and technical positions). Among the faculty employees, the most common age group is 30–39 years.

FIT students are educated in three-year Bachelor, two-year follow-up Master, and four-year Doctoral study programs, out of which Master and Doctoral programs are provided in both Czech and English. Between 2019 and 2023, typically one or two programs were running at each level while only one was open for admissions. Moreover, at Master and Doctoral levels, FIT is running double degree programs. The industrial partners, to whom FIT has close ties, provide students with opportunities

for internships, practical projects, and career development. On top of the standard education program, faculty also offers lifelong-learning courses.

FIT has an international dimension integrated in the faculty quite naturally, with students and faculty members coming from various countries. FIT participates in numerous international research projects and collaborations, and this is understood as integral part of faculty activities.

As for the numerical data between 2019 and 2023, a total of 6,579 students studied at FIT, out of which 678 female and 5,901 male. The student population grew steadily across all levels of study. Undergraduate enrolment increased by 21%, from 1,729 students in 2019 to 2,092 in 2023. Doctoral student numbers remained relatively stable at around 170 annually.

Table 3.1.1 - Staffing per FTE²

Academic/ Professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	8.1/2	7.9/0	7.9/0	8.8/0	7.6/0	40.3/2
Associate Professor	17.7/0	18.4/1	18.7/1	19.3/1	20.8/0.9	94.9/3.9
Assistant Professor	26.3/0	29.3/1.7	31/1.7	29,5/1.6	29.1/2.2	145.2/7.2
Assistant	1.3/0.9	1.9/0	1.7/0	2.1/0	2.1/0	9.1/0.9
R&D Personnel ³	0/0	0/0	0/0	0/0	0/0	0/0
Researchers in other categories ⁴	11.1/0	15.6/1.4	13.5/0.7	57.3/5.6	53.3/2.3	150.8/10
Technical and economic staff ⁵	152.9/61.8	163.4/65.7	142.5/61	89.5/56.7	83.7/56	632/301.2
Scientific, research and development staff involved in teaching activities	0/0	0/0	0.2/0	0.4/0	0/0	0.6/0
Early career researchers ⁶	7.3/2.5	4.4/1.4	6.1/1	7.1/0.8	9.6/3.4	34.5/9.1
Total ⁷	224.7/67.2	240.9/71.2	221.6/65.4	214/65.7	206.2/64.8	1107.4/334.3

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D Personnel, Researchers in other categories and Technical and economic staff are mutually exclusive, i.e. one staff member is reported in only one category. The categories of scientific, research and development staff involved in teaching activities and early career researchers are reported collectively for all the above-mentioned categories.

² The average number of hours worked is calculated as the ratio of the total number of hours actually worked during the reference period, from 1 January to 31 December, by all staff (including agreement on work activity, excluding agreement on work performance) to the total annual working time pool per full-time employee. The full-time status of the worker in the evaluated unit is always reported. If an employee holds more than one type of full-time job within the evaluated unit, the total sum of the two shall be reported.

³ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

⁴ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

⁵ Who participates in the management and support of R&D&I in the institution.

⁶ See Definition of Terms in Methodology HEI2025+.

⁷ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

3.1.2 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2019 (numbers of physical employees and personnel)⁸

Academic/ professional position	Under 29 years		30-39 years		40-49 years		50-59 years		60-69 years		70 years&older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	4	0	1	0	2	0	2	0
Associate Professor	0	0	1	0	9	0	3	0	3	2	6	1
Assistant Professor	0	0	12	3	16	0	5	0	0	0	1	0
Assistant	0	0	1	0	0	0	0	0	0	0	0	0
R&D Personnel ⁹	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁰	1	0	8	2	11	0	0	0	0	0	0	0
Technical and economic staff ¹¹	71	16	85	18	45	21	25	15	11	6	4	3
Scientific, research and development staff involved in teaching activities	0	0	0	0	0	0	0	0	0	0	0	0
Early career researcher ¹²	0	0	8	3	0	0	0	0	0	0	0	0
Total ¹³	72	16	115	26	85	21	34	15	16	8	13	4

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D Personnel, Researchers in other categories and Technical and economic staff are mutually exclusive, i.e. one staff member is reported in only one category. The categories of scientific, research and development staff involved in teaching activities and early career researchers are reported collectively for all the above-mentioned categories.

⁸ The total number of employees/workers as of 31st December of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

⁹ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁰ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹¹ Who participates in the management and support of R&D&I in the institution.

¹² See Definition of Terms in Methodology HEI2025+.

¹³ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I Personnel, Researchers in other categories and technical and economic staff.

3.1.3 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2023 (numbers of physical employees and personnel)¹⁴

Academic/professional position	Under 29 years		30-39 years		40-49 years		50-59 years		60-69 years		70 years&older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	2	0	3	0	1	0	2	0
Associate Professor	0	0	0	0	14	0	6	0	2	0	3	1
Assistant Professor	0	0	13	2	21	2	0	0	1	0	0	0
Assistant	0	0	1	0	1	0	0	0	0	0	0	0
R&D Personnel ¹⁵	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁶	33	0	42	0	16	2	2	0	0	0	1	0
Technical and economic staff ¹⁷	8	4	19	9	25	17	27	22	15	11	6	4
Scientific, research and development staff involved in teaching activities	0	0	0	0	0	0	0	0	0	0	0	0
Early career researcher ¹⁸	0	0	15	4	0	0	0	0	0	0	0	0
Total¹⁹	41	4	90	15	79	21	38	22	19	11	12	5

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

¹⁴ The total number of employees/workers as at 31.12. of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

¹⁵ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁶ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹⁷ Who participates in the management and support of R&D&I in the institution.

¹⁸ See Definition of Terms in Methodology HEI2025+.

¹⁹ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

Table 3.1.4 - Students

Type of study	2019		2020		2021		2022		2023		Total	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Undergraduate	1729	152	1888	192	2085	226	2123	245	2092	236	4982	529
Master's ²⁰	451	39	476	42	475	41	516	45	518	51	1321	124
Doctoral	171	19	172	18	171	20	148	16	154	14	276	25
Lifelong Learning Courses	5	0	17	5	56	32	22	5	19	3	119	45
Total	2356	210	2553	257	2787	319	2809	311	2783	304	6698	723

Table 3.1.5 - Study programmes in Czech/English

Type of study programme	Total ²¹ / Of which professional study programmes											
	2019		2020		2021		2022		2023		Total	
Undergraduate	2 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	2 / 0	0 / 0
Master's	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	2 / 2	0 / 0
Doctoral	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	2 / 2	0 / 0
Lifelong Learning courses	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	2 / 1	0 / 0	2 / 1	0 / 0	2 / 1	0 / 0
Total	5 / 2	0 / 0	4 / 2	0 / 0	4 / 2	0 / 0	5 / 3	0 / 0	5 / 3	0 / 0	4 / 5	0 / 0

Note: For each SP type, enter the number of SPs in Czech language in the first cell and insert the number of SPs in English language after the slash in the same cell (e.g. 15/3), enter the number of professional SPs in Czech language in the second cell and insert the number of professional SPs in English language after the slash. Follow a similar procedure in the last column of the table (Total).

²⁰ All Master's degree students are listed, regardless of the length of their programme of study.

²¹ The total number of study programmes for which admissions have been announced in a given academic year.

3.1.6 - R&D&I capacities

R&D&I field	FORD	FORD share	Predominant type of research	Total share of industry group
1. Natural Sciences	1.1 Mathematics	80 %	Balanced basic&applied	80 %
	1.2 Computer and information sciences			
	1.3 Physical sciences			
	1.4 Chemical sciences			
	1.5 Earth and related environmental sciences			
	1.6 Biological sciences			
	1.7 Other natural sciences			
2. Engineering and Technology	2.1 Civil engineering	20 %	Balanced basic&applied	20 %
	2.2 Electrical engineering, Electronic engineering, Information engineering			
	2.3 Mechanical engineering			
	2.4 Chemical engineering			
	2.5 Materials engineering			
	2.6 Medical engineering			
	2.7 Environmental engineering			
	2.8 Environmental biotechnology			
	2.9 Industrial biotechnology			
	2.10 Nanotechnology			
	2.11 Other engineering and technologies			
3. Medical and Health Sciences	3.1 Basic medicine			
	3.2 Clinical medicine			
	3.3 Health sciences			
4. Agricultural and veterinary sciences	4.1 Agriculture, Forestry, and Fisheries			
	4.2 Animal and Dairy science			
	4.3 Veterinary science			
	4.4 Other agricultural sciences			
5. Social Sciences	5.1 Psychology and cognitive sciences			
	5.2 Economics and Business			
	5.3 Education			
	5.4 Sociology			
	5.5 Law			
	5.6 Political science			
	5.7 Social and economic geography			
	5.8 Media and communications			
	5.9 Other social sciences			
6. Humanities and the Arts	6.1 History and Archaeology			
	6.2 Languages and Literature			
	6.3 Philosophy, Ethics and Religion			
	6.4 Arts (arts, history of arts, performing arts, music)			
	6.5 Other Humanities and the Arts			
Total		100 %		100 %

RECOGNITION BY THE RESEARCH COMMUNITY

3.2 Recognition by the research community

The evaluated unit will briefly comment on its position in the research community. It shall consider individual and other prestigious R&D&I awards, participation of its academic staff in the editorial boards of international scientific journals, elected membership in professional societies, major invited lectures given by the evaluated unit's academic staff abroad or by foreign scientists and other relevant guests at the evaluated unit. Additionally, it will address the involvement of staff in the evaluation of national or European project/programme calls over the period of 2019–2023 based on the data provided in annex tables 3.2.1 to 3.2.5 (max. 10 most relevant items). If necessary, the evaluated unit shall list any additional services to the scientific community that it considers relevant.

Maximum 1000 words.

Self-assessment:

The achievements of FIT, especially in research, are reflected in winning of a number of awards (including awards for the conference papers and award achievements in international competitions), accompanied with one honorary doctorate. Researchers from FIT BUT participated in editorial boards of prestigious journals and in programme committees of top conferences. Researchers from FIT BUT also delivered invited lectures at renowned universities, companies, and conferences.

In the period under evaluation, more than 20 awards were received by our faculty members, out of which 10 are briefly mentioned in the table below. **These awards show that our mission is being fulfilled and justify the ambition of our vision.** For example:

- **Hlávka Foundation** (<http://www.hlavkovanadace.cz>) is a **foundation** established by the Hlávka family and awards distinguished scholars for their contributions. The "**Medal of Josef Hlávka**" awarded by the foundation to prof. Jan M. Honzík is a very rare award that is achieved by BUT personnel for the first time and reflects the distinguished achievement of exceptionally outstanding scholars (<https://www.fit.vut.cz/fit/news/d269683/.en>).
- Award of the Minister of the Interior of the Czech Republic reflects a very **narrowly** selected projects and results contributing to security, in our case cybersecurity in the Czech Republic. "**Prize of the Ministry of Interior for Extraordinary Design**" for project BAZAR is a very important award that, in fact, to some extent "replaces" scientific publications of the authors who, given the nature of the research, cannot publish the results of their very precious research (<https://mv.gov.cz/vyzkum/clanek/cena-ministra-vnitra-za-mimoradne-vysledky-v-oblasti-bezpecnostniho-vyzkumu-experimentalniho-vyvoje-a-inovaci-za-rok-2024.aspx>).
- **The Czech Head Award** (<https://www.ceskahlava.cz/>) is granted to the best of the best graduates of Doctoral studies in the Czech Republic, in this case for technical sciences. This is, within research community, considered the most prestigious award for science in the Czech Republic and the fact that Dr. Vojtěch Mrázek received it in 2019 is a really extraordinary achievement of FIT (<https://www.fit.vut.cz/fit/press/2607/.en>).

In addition to the awards, prof. Pavel Zemčík received **an honorary doctorate** from Lappeenranta-Lahti University of Technology, Finland, in 2023 (<https://www.vut.cz/vut/aktuality-f19528/dekan-fit-prevzal-cestny-doktorat-finske-lappeenranta-lahti-university-of-technology-d226774>).

Recognition by the research community is an important part of our vision and mission; it is underlined by the presence of our staff in **editorial boards and publication bodies**. While the 10 examples are listed in the table below, here we provide some examples:

- **Genetic Programming and Evolvable Machines** – the journal by Springer is among the most important ones in the field of genetic programming with many outstanding papers. It is an honor for FIT that prof. Lukáš Sekanina was selected as an associate editor.
- **Journal of Real-Time Image Processing** – the key journal in the field of image processing by Springer. Dr. David Bařina, being one of the young researchers as an editorial board member, is a sign of outstanding achievements by himself and FIT.
- **Computer Graphics Forum** – the leading journal in the field of computer graphics by EUROGRAPHICS (European Association for Computer Graphics); having Assoc. Prof. Martin Čadík on the editorial board, was an extraordinary achievement for FIT.

The invited lectures of our people and visits of foreign experts lecturing on our ground can be seen as another important indicator of recognition of the organization by the research community; moreover, they contribute to our mission and vision. A list of 10 of invited lectures is in the table below, here we chose examples showing the variety of institutions:

- **Purdue University**, United States of America (Martin Čadík) – Purdue University is a highly ranked U.S. university and a leading one in the field of technology, especially in computer graphics; Assoc. Prof. Martin Čadík invited for a lecture, is a quite significant achievement.
- **Le Mans University**, France (Petr Schwarz) – Le Mans University is a well-performing European university. Dr. Schwarz held the lecture while heading the workgroup “Automatic design of conversational models from observation of human-to-human conversation” at the prestigious Jelinek Summer Workshop on Speech and Language Technology.
- **IIT Madras**, India (Oldřich Plchot) – Our colleagues are being invited not only to European universities and U.S. universities; invitation of Dr. Oldřich Plchot for a speech to IIT (Indian Institute of Technology) in Madras, India, a top Indian institution, is an example of outreach of FIT.

As for the reciprocity of the visits and lectures, our **foreign partners are visiting us** and delivering valuable lectures, contributing to the mission and vision, from which 10 can be seen in the table below. Note, please, examples of variety of institutions:

- **Academia Sinica**, Taiwan (Chen Yu-Fang) – Academia Sinica, Taiwan, is a very top Taiwanese research institution with almost 100 years of tradition in research. They sent a researcher for a speech and a stay at FIT and this is an honor.
- **Google Research**, United States of America (Bhuvana Ramabhadran) – Google is generally accepted as one of the most prestigious commercial research-oriented organizations; it is a sign of FIT excellence to receive their colleague for a speech.
- **IIT, Madras**, India (Hema A. Murthy) – This is a top research Indian institution; the ongoing collaboration in speech processing and visit to FIT is an honor for FIT and a sign of good relationship.

Importantly, although indirectly, the **scientific relevance and acceptance by the research community contributed to mission and vision**. It can be illustrated through participation in evaluation of research projects funding proposals. Our staff are participating in many evaluations from which 10 are listed in the table below; as an illustration of their coverage, note, please, the following ones:

- **Czech Science Foundation** (e.g. Adam Herout) – Czech Science Foundation (GAČR <https://gacr.cz/en/>) is a key Czech funding agency focusing basic research; to be involved in project evaluations is a service to the community and a sign of respect.
- **Technology Agency of the Czech Republic** (e.g. Pavel Zemčík) – Technology Agency of the Czech Republic (TAČR <https://tacr.gov.cz>) is the key agency funding applied research; it is important for a technological faculty to be involved, again as a service to community and a sign of respect.
- **European Research Council** (e.g. Jan Černocký) – European Research Council (ERC <https://erc.europa.eu/homepage>) grants are considered the most prestigious in European research, and our expert reviews of ERC proposals show their international standing.

We believe that the above-mentioned **examples of acknowledgement** and integration of our people into the research community **are illustrative and demonstrate that we do have reputation** in the community, in many cases with worldwide outreach. The recognition by the research community is indirectly also demonstrated by organization of important scientific conferences, e.g. **Interspeech 2021** (speech processing - <https://www.interspeech2021.org/>) and **Evostar 2023** (bio-inspired computation - <https://www.evostar.org/2023/>). This type of acknowledgment directly aligns with our vision and mission, underscoring our commitment to achieving an international reputation.

Table 3.2.1 - Prestigious R&D&I awards granted during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the award	Awarding institution
Ondřej Lengál, Ing., Ph.D. et al.	The Best Paper award of FM'23 (Formal Methods)	FM Programme Committee, Germany
Vojtěch Havlena, Ing., Ph.D.	Josef Hlávka's Prize 2021 (talent)	The foundation "Nadání Josefa, Marie a Zdeňky Hlávkových", Czech Republic
Hynek Heřmanský, prof. Ing., Dr. Eng.	IEEE James L. Flanagan Speech and Audio Processing Award 2020	IEEE Signal Processing Society, United States of America
Jan M. Honzík, prof. Ing., CSc.	Medal of Josef Hlávka in 2023	The foundation "Nadání Josefa, Marie a Zdeňky Hlávkových", Czech Republic
Vojtěch Mrázek, Ing., Ph.D.	The Czech Head (Česká hlava) – Doctorandus of Technical Sciences in 2019	Česká hlava PROJEKT z.ú., Czech Republic
Vojtěch Mrázek, Ing., Ph.D.	The Joseph Fourier Award in computer science in 2019 (1st place)	French Embassy in the Czech Republic, Czech Republic
Barbora Šmahlíková, Ing.	The Award of the Czech Government for a Gifted Student in 2022	Czech Government, Czech Republic
Zdeněk Vašíček, doc. Ing., Ph.D.	Best Paper Awards, International Symposium on Design and Diagnostics of Electronic Circuits and Systems (DDECS) in 2021	DDECS Programme Committee, Vienna, Austria
Tomáš Vojnar, prof. Ing., Ph.D., et al.	Medals from the International Competition in Software Verification SV-COMP 2020 + 2021	TACAS SV-COMP Committee, Ireland 2020, Luxembourg 2021
František Zbořil, doc. Ing., Ph.D. et al.	First place in Multi-Agent Programming Contest 2021	Multi-Agent Programming Contest Committee, Clausthal, Germany

Note: Provide up to 10 examples.

Table 3.2.2 Participation of academic staff of the evaluated unit in editorial boards of international scientific journals during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of scientific journal, ISSN
David Bařina, Ing., Ph.D.	Journal of Real-Time Image Processing, Editorial Board Member, ISSN: 1861-8219 (IF 2.9 in 2023)
Martin Āadık, doc. Ing., Ph.D.	Computer Graphics Forum, Editorial Board Member, ISSN: 0167-7055 (till 2021) (IF 2.7 in 2023)
Lukáš Sekanina, prof. Ing., Ph.D.	Genetic Programming and Evolvable Machines, Associate Editor, ISSN: 1389-2576 (IF 2.5 in 2022)
Hynek Heřmanský, prof. Ing., Dr. Eng.	Speech Communication, Elsevier, Editorial Board Member, ISSN: 0167-6393 (IF 2.4 in 2023)
Tomáš Vojnar, prof. Ing., Ph.D.	International Journal on Software Tools for Technology Transfer (STTT), theme Competitions and Challenges, Editorial Board Member, ISSN: 1433-2779 (IF 1.1 in 2023)
Peter Chudý, doc. Ing., Ph.D., MBA	Aerospace Systems, Springer Nature, Editorial Board Member ISSN: 2523-3955/2523-3947 (IF 0,8 in 2023)
Marek Rychlý, RNDr., Ph.D.	Open Computer Science, De Gruyter Open Access, Editorial Board Member ISSN: 2299-1093 (IF 0,7 in 2023)
Petr Hanáček, doc. Dr. Ing.	International Journal on Advances in Security, Editorial Board Member, ISSN: 1942-2636
Lukáš Sekanina, prof. Ing., Ph.D.	International Journal of Innovative Computing and Applications, Editorial Board Member, ISSN: 1751-648X
Tomáš Vojnar, prof. Ing., Ph.D.	Central European Researchers Journal (CERES), Editorial Board Member, ISSN: 2453-7314

Note: Please provide up to 10 examples of academic staff participation in editorial boards of international scientific journals (e.g. editor, editorial board member, etc.).

Table 3.2.3 The most important invited lectures delivered by the academic staff of the evaluated unit at foreign institutions during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Invited lecture title	Name of host institution, or name of conference or event	Year
Martin Čadík, doc. Ing., Ph.D.	Visual geo-localization and camera orientation estimation	Purdue University, United States of America	2019
Milan Češka, doc. RNDr., Ph.D.	Herdin Markov Cats: Effective Reasoning over Families of Probabilistic Models	Radboud University Nijmegen, The Netherlands	2023
Mireia Diez Sánchez, M.Sc., Ph.D.	Keynote talk: "Variants of Bayesian HMMs for speaker diarization"	Third DIHARD Speech Diarization Challenge workshop, remote (COVID)	2021
Hynek Heřmanský, prof. Ing., Dr. Eng.	Invited talk, "We speak to be heard"	University of Tokyo, and Sophia University, Tokyo, Japan	2022
Jiří Jaroš, doc. Ing., Ph.D.	Modelling Biomedical Ultrasound	Institut für Geophysik, Department of Earth Sciences, ETH Zürich, Switzerland	2020
Aamir S. Malik, prof., Ph.D.	Performing analytics on Brain Electroencephalogram (EEG) data	Center of Excellence in Intelligent Engineering Systems (CEIES) at King Abdulaziz University, Saudi Arabia	2022
Oldřich Plchot, Ing., Ph.D.	Invited talk: "Using large-scale pre-trained models for building speech applications"	IIT Madras, India	2022
Oldřich Plchot, Ing., Ph.D.	Invited talk: "Current and emerging trends in extracting speaker embeddings"	SPECOM satellite workshop on Speaker and Language Identification, Verification, and Diarization, Goa, India	2023
Lukáš Sekanina, prof. Ing., Ph.D.	Evolutionary design of approximate circuits	University of Alberta, Edmonton, Canada	2019
Petr Schwarz, Ing., Ph.D.	Hyperspeed in large language modeling	Le Mans University, France	2023

Note: Provide up to 10 examples.

Table 3.2.4 - The most important lectures by foreign scientists and other guests relevant to R&D&I at the evaluated unit during the evaluation period

Name, surname and title(s) of the lecturer	Lecturer's employer at the time of the lecture	Invited lecture title	Year
Gianni Antichi, Dr.	Politecnico di Milano, Italy	The Quest for Hardware Support in Network Telemetry	2023
Yu-Fang Chen, prof.	Academia Sinica, Taiwan	An Automata-based Framework for Verification and Bug Hunting in Quantum Circuits	2023
Tariq Mahmood, Assoc. prof.	Korea University of Technology, South Korea	Guided image filtering in shape from focus	2023
Heikki Kälviäinen, prof.	Lappeenranta-Lahti University of Technology, Finland	Computer Vision Applications	2022
Sébastien Lefèvre, prof.	University of South Brittany (Vannes Institute of Technology), France	Deep Learning in Computer Vision: Are Numerous Labels the Holy Grail?	2023
Hema A. Murthy, prof.	Indian Institute of Technology Madras, India	Signal Processing Guided Machine Learning	2022
Ilya Oparin, Ph.D.	Apple, United States of America	Connecting and Comparing Language Model Interpolation Techniques	2019
Bhuvana Ramabhadran, Ph.D.	Google Research, United States of America	Multilingual Speech Recognition and Synthesis	2023
Barbara Schuppler, Assoc. prof. Mag. rer. nat. Dr.	Graz University of Technology, Austria	Automatic speech recognition for conversational speech, or: What we can learn from human talk in interaction	2019
Christian Wimmer, Dr. techn. Dipl.-Ing.	Oracle Labs, United States of America	Native Image Static Analysis	2022

Note: Provide up to 10 examples.

Table 3.2.5 - Involvement in the evaluation of national/European research project/programme calls relevant to the R&D&I area at the unit during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the research project/programme call	Name of the contracting of the authority/guarantor project/programme call	Year
Jan Černocký, prof. Dr. Ing.	ERC Advanced Grant reviewer	European Research Council, Belgium	2021
Jan Černocký, prof. Dr. Ing.	Scientific board	Czech Science Foundation (GAČR), Czech Republic	2022–2023
Matěj Grégr, Ing. Ph.D.	Development Fund of CESNET standard projects (Fond rozvoje CESNET)	CESNET, Czech Republic	2019–2023
Adam Herout, prof. Ing., Ph.D.	Evaluation panel P103 "Cybernetics, Artificial Intelligence and Information Processing" member	Czech National Science Foundation (GACR), Czech Republic	2023
Hynek Heřmanský, prof. Ing., Dr. Eng.	Advisory Board, Hearing4All	Government of Lower Saxony, Germany	2021–2023
Ivan Homoliak, doc. Ing., Ph.D.	Membership in the expert panel for the evaluation of the Flemish action plan Cyber Security	Flanders innovation & entrepreneurship, Belgium	2020
Pavel Smrž, doc. RNDr., Ph.D.	National grant proposal, joint bilateral proposals with other European countries (such as Polish-Swiss ones)	National grant agencies in Poland, Cyprus, and Romania.	Since 2022
Tomáš Vojnar, prof. Ing., Ph.D.	Membership in the expert panel P103 in the team of evaluators according to the M17+ Methodology	Czech Science Foundation (GAČR), Czech Republic	2019–2023
Tomáš Vojnar, prof. Ing., Ph.D.	Horizon Europe: EIC Pathfinder	European Commission, Belgium	2023
Pavel Zemčík, prof. Dr. Ing., dr. h. c.	Reviewer of standard project project funding applications	Technology Agency of Czech Republic (TAČR), Czech Republic	2029–2023

Note: Provide up to 10 examples.

RESEARCH PROJECTS

3.3 Research projects

The evaluated unit shall list at most 10 (considered most significant by the evaluated unit) research projects/activities (regardless of whether they are supported by public funds or based on contract research²²) that it has implemented or participated in during the period of 2019–2023²³. This should be done from the full list in annex tables (Table 3.3.1-3.3.2)²⁴, regarding particularly the results achieved or the application potential of the projects. The unit should also describe how the research projects contributed to the mission and purpose of the evaluated unit. If the evaluated unit has been a participant in listed project, it shall indicate which other entities were involved and describe its contribution to the project. The interdisciplinary aspects of the projects will also be commented on, along with any collaboration with other units of the evaluated HEI.

Maximum 300 words per project.

Self-assessment:

The 67 grant projects, where our staff were the principal investigators (PI), and the 80 grant projects in which we participated, accompanied by 59 contractual research projects not only contribute to our mission and purpose but they, in fact, bring majority of funding and so they are a significant part of our activities. Most of the projects are in line with the BUT strategy (<https://www.vut.cz/en/rad>), addressing mainly Innovation for the Digital Era, especially Cybersecurity and Artificial Intelligence, but also Health, Technologies for the Future and other fields. Out of these projects, it is difficult to choose the 10 most important; however, the following ones perhaps best fit our vision, contribute to the mission, and can illustrate the FIT project portfolio:

- Project Efficient Finite Automata for Automated Reasoning, MŠMT, 2020–2024, 28468 K CZK/ 1122952 EUR:**
<https://www.fit.vut.cz/research/project/c31290/.en> The project was funded through the ERC CZ scheme (a scheme that supports Czech ERC projects that achieved the best evaluation but ended below the EU threshold for funding) in the years 2020–2024. It aimed to improve the efficiency of basic finite automaton techniques. Finite automata are a fundamental concept in computer science and has numerous applications. Research on automata is continuously yielding new results on a wide range of applications in automated decision-making, formal verification, language processing, databases, and web technologies. Unfortunately, while remarkable, their practical impact is limited mainly by the need for more scalability of automata techniques rooted in basic concepts and algorithms. We saw an opportunity to achieve breakthroughs in decision-making efficiency from advances in automated decision-making and verification. Concepts such as lazy evaluation, alternation, symbolic representation, abstraction, or heuristics from SAT/SMT solving were combined with traditional automata techniques and elaborated on in novel ways. For example, SAT/SMT problem-solving and software verification that led to beneficial and practically scalable methods and tools, as well as new opportunities for deep theoretical study of new techniques were investigated. The results have been published in conferences

²² For the definition of contract research for the purposes of evaluation in the HE segments, see Article 2.2.1 of the Community Framework for State Aid for Research, Development and Innovation 2014/C 198/01.

²³ Regardless of whether the projects are completed or still ongoing, provided that at least part of the project was implemented during the evaluation period.

²⁴ The evaluated unit shall only fill tables that are relevant to it.

and journals. Several tools have also been developed (see the above link to the project page). The project belongs to the most prestigious and challenging ones, and so it contributes to FIT mission, and exploits new concepts in theoretical foundations of computer science and so it also fulfills our vision

- **Project 5G-ERA - 5G-Enhanced Robot Autonomy, EU H2020, 2021–2024, 13885 K CZK/ 547693 EUR:**
<https://www.fit.vut.cz/research/project/c32427/.en> The 5G-ERA project was funded through Horizon 2020 in the years 2021–2024. The project aims, alongside all other ICT-41 projects, to provide an enhanced 5G experimentation facility and relevant Network Applications (NetApps) for 3rd party application developers provide them with a 5G experimentation playground to test and qualify their applications. The new 5G Network features enable for faster, lower latency, and more reliable communications opening a space for new applications. 5G-ERA addresses the new challenges in experimental facilities for the vertical developers and designers in the field of robotic applications. The project led to the development of interesting concepts supporting, e.g., navigation of robotic vehicles including automatic modeling and simulation of driving in a 3D road traffic environment, contributing to the FIT mission by application in industry, and also tools and publications (A list of these tools and publications can be found on the above project link).
- **Project Verification and Validation of Automated Systems' Safety and Security (VALU3S), EU H2020 ECSEL/MŠMT, 2020–2023, 10935 K CZK/ 431403 EUR:**
<https://www.fit.vut.cz/research/project/c31368/.en> This Horizon 2020, ECSEL (Electronic Components & Systems for European Leadership) project was executed in the years 2020–2023. Manufacturers of automated systems (such as automated driving systems) and the manufacturers of the components used in these automated systems have been allocating an enormous amount of time and effort in the past years developing and conducting research on automated systems. The main effort put on the development of these systems is focused on a key factor, "getting them to work". As the new functionality of these automated systems was shown in development prototypes, to be introduced to any market it must be clear, that these new automated systems are safe and secure. To show this, these systems need to be verified and validated taking into account requirements such as safety, cybersecurity, and privacy. The focus of the VALU3S was on verification and validation of cyber-physical automated systems. For this, VALU3S investigated and developed methods, tools and concepts that suit the evaluation of automated systems. Several tools have also been developed, e.g., the network application tester based on the fault-injection method (NetLoiter), which has attracted the attention of Roboauto and NXP, which are currently considering its use (see the project link above for more complete results list). The project contributed to FIT vision through addressing new technology for the modern world and its mission by addressing challenging fields with results applicable in the industry.
- **Project IARPA MATERIAL - Machine Translation for English Retrieval of Information in Any Language – Foreign Language Automated Information Retrieval (FLAIR), IARPA, 2017–2021, 10829 K CZK/ 427150 EUR:** <https://www.fit.vut.cz/research/project/c28381/.en>
 Very uniquely, the project has been funded by the IARPA - Intelligence Advanced Research Projects Activity in the years 2017–2021. The goals of the program were to develop methods for finding speech and text content in low-resource languages that are relevant to domain-contextualized English queries. BUT worked on the "FLAIR" team coordinated by Raytheon BBN Technologies and its tasks included automatic speech recognition in Material target languages, supported by other technologies, such as automatic language identification to

filter out non-target speech data. The outcomes of the project included not only tools and publications (see the project link above) but also contribution in FIT mission in service to the society, FIT vision through exploiting AI and helping to protect from threats, and the project also deepened the important collaboration with the United of America.

- **Project Automated Design of Hardware Accelerators for Resource-Aware Machine Learning, GAČR, 2021–2023, 10600 K CZK/ 313608 EUR:**
<https://www.fit.vut.cz/research/project/c32594/.en> The project funded through the Czech Science Foundation, standard project scheme in the years 2021–2023. The current approach to the neural network design is based on semi-automated simplifying of a network created by a human expert who could only partly reflect all hardware implementation aspects. In this project, the aim was to propose and evaluate methods for the highly automated design of hardware accelerators of DNNs (and other selected ML methods), and their essential components, that show excellent trade-offs between the output quality, energy and resources used on a single chip. Our approach was based on the multi-objective evolutionary design of such implementations of DNNs (and other ML systems) that reflect a target hardware platform. The proposed method was evaluated on standard as well as specific benchmark problems in the area of image and signal classification. Major results were published in high-quality publication venues (see the project link above). Final evaluation of project results by the Czech Science Foundation: Excellent. The project and its results fit the FIT vision being oriented towards AI and also the FIT mission by focusing challenging fields.
- **Project Arrowhead Tools for Engineering of Digitalisation Solutions, EU H2020 ESCEL/MŠMT, 2019–2022, 7472 K CZK/ 294752 EUR:**
<https://www.fit.vut.cz/research/project/c30251/.en> The project was funded through Horizon 2020, ECSEL within the years 2019–2022. The project aim was to create digitalization and automation solutions, addressing engineering methodologies and suitable integrated tool chains for cost-efficient developments of digitalization, connectivity, and automation systems. For the further and wider commercialization of automation and digitalization services and products based on SOA, Arrowhead Framework, and similar technologies, there is a clear need for engineering tools that integrate existing automation and digitalization engineering procedures and tools with SOA-based automation/digitalization technology. The results improved the automation and digitalization solutions, efficiency and the SSBS market, automation and digitalization security, and competence development on the engineering of solutions. The results have been published in conferences and journals (see at the project link above). It fits the FIT vision in using novel concepts and the mission by focusing the industry.
- **Project Flow-based Encrypted Traffic Analysis, MVČR, 2022–2025, 6768 K CZK/ 266979 EUR:**
<https://www.fit.vut.cz/research/project/c33346/.en> The project is funded by the Ministry of the Interior, Security Research scheme in the years 2022–2025. It focused on the design of new methods to protect networks against cyber threats. Machine learning techniques are used to classify encrypted network traffic and detect security incidents. FIT BUT is responsible for the hardware acceleration of network monitoring probes to collect data for the machine learning classifiers. We have designed a hardware packet processing pipeline with a 400 Gbps throughput and a system to accelerate the classifiers in FPGA. Both have been published at prestigious conferences. The acceleration of Suricata IDS received the best paper award. Together with CESNET, we developed probes accelerated by FPGA cards with the hardware processing pipeline. The National Center of Cybersecurity Operations (unit of the Czech Army) already uses these probes. This certainly fits the FIT vision by protection

from cybersecurity threats as well as the mission as it focuses challenging field and service to the society.

- **Project BAZAR - Building better and safer darknet without wallet-less marketplaces, MVČR, 2021–2022, 4175 K CZK/ 164726 EUR:**

(<https://www.fit.vut.cz/research/project/c32143/.en>) was funded by Ministry of the Interior of the Czech Republic run during the years 2021–2022. The BAZAR project focused on obtaining non-trivial information about operations and trades in dark marketplaces. The main goal of the project was to share information and analytic tools among leading experts within the Czech and European law enforcement agencies already having an impact (<https://www.europol.europa.eu/media-press/newsroom/news/288-dark-web-vendors-arrested-in-major-marketplace-seizure>) and commercial impact (sold to Netsearch, s. r. o.) and fitting the FIT mission and vision by protecting society and being high-tech.

- **Project Deep-Learning Approach to Topographical Image Analysis, MŠMT (INTER-EXCELLENCE with Israel), 2019–2022, 3822 K CZK/ 150762 EUR:**

(<https://www.fit.vut.cz/research/project/c30626/.en>) The project has been funded by the Ministry of Education, Youth and Sports of the Czech Republic in the years 2019 – 2022. It focused on the current problems of computer vision, especially on visual localization in the natural environment. The visual location of the camera in the outdoor environment is not a fixed issue today, although it offers a wide range of attractive applications from automatic image comprehension to expanded reality applications to navigation of self-governing vehicles and airplanes. The project aimed to research new methods for locating cameras based on the multimodal data registration, especially photographic information, synthetic rendered images, depth information and field models using current machine learning methods, especially deep neural networks (DNN). In addition to the use of terrain data in the form of graphical models, an alternative of predictive depth information from an input photograph was explored. The FIT members have been dealing with the long-standing problem and have deep experience in research and application. The Israeli partner also offered unique datasets indispensable for DNN training. The project is not only a good example of bi-lateral one, but it also contributes to FIT mission, fits the FIT vision in affecting the modern world, and it has very nice publication results (see the project link above).

- **Project CITRUS: Closed-loop Individualized image-guided Transcranial Ultrasonic Stimulation, EU HE, 2022–2026, 1660 K CZK/ 65469 EUR:**

(<https://www.fit.vut.cz/research/project/c33665/.en>) The project was funded through Horizon Europe program Pathfinder during the years 2022–2026. CITRUS project has organized forces across Europe to advance a new non-invasive technology - transcranial ultrasound stimulation (TUS) - to reversibly modulate brain regions with exquisite millimeter precision, even deep in the brain. As such, it aims to establish an urgently needed novel treatment option for neurological and psychiatric diseases. TUS combines the precision and reach of invasive deep brain stimulation, required to directly target clinically relevant structures, with the non-invasive and low-cost nature of transcranial electromagnetic techniques that are inherently limited in focus and depth. The FIT team is responsible for parallel implementation and acceleration of computationally intensive simulation methods used in the project. The project not only has interesting publication results and impact on industry (see also k-Wave commercialization below and project page link) but also contributes sustainability of computing through reduction of electrical power thanks to efficiency of computation and so is also fits the FIT vision of the technology for modern world as well as the FIT mission.

Table 3.3.1 Projects supported by public funds

In the role of beneficiary					
Provider ²⁵	Support (in thousands CZK/EUR) ²⁶				
	2019	2020	2021	2022	2023
Programy TA ČR	20369/803523	17345/684213	6347/250344	13888/547872	4657/183272
Programy MV ČR	26271/1036380	29158/115022	28505/112446	23824/939782	12567/49574
Programy GA ČR	10305/471203	12323/486112	15863/625762	11485/453048	13573/535423
Horizon 2020	6939/273758	14070/448496	5498/216877	4149/163686	0
Horizon Evropa	0	0	0	828/32695	4440/175178
ECSEL	3452/136173	4218/166390	3346/131992	1341/52899	0
MŠMT	4850/191323	1462/57690	1191/46988	1190/46949	1728/68180
Program COST	2652/104616	2659/104891	1515/59763	0	0
Program ERC-CZ	0	7117/280738	7117/280738	7117/280738	7117/280738
Program EU-JU ECSEL	3176/125279	1595/62906	2959/116762	1179/46494	0
Programs MKČR (Culture)	4078/160868	4078/160868	4052/159860	4033/159104	0
EU (CEF)	687/27105	4082/161016	6321/249368	0	0
Mobility CZ-Germany	0	0	26/1020	33/1301	0
Programs Inter Excellence	650/25641	2827/111519	2730/107688	2263/89270	1126/44418
MPO (Ministry of Industry)	1725/68035	2159/85153	0	0	0
Total in K CZK	85154	103093	85470	71330	45208
Total in EUR	3423904	3960218	3371630	2813838	1782956
In the role of participant					
Provider ²⁷	Support (in thousands CZK/EUR)				
	2019	2020	2021	2022	2023
Programs TAČR	13591/536100	18716/738327	22645/893366	16215/639663	18533/731025
Programs MVČR (Interior)	972/38338	1766/69653	1648/65006	10582/417437	14953/589859
Programy GAČR	0	0	0	1311/51716	1311/51716
Horizon 2020	5816/229434	8838/348655	9190/362464	10313/406801	11000/433888
Horizon Europe	0	0	0	146/5764	1956/77149
MPO (Industry)	2422/95529	5155/203375	6394/252225	5914/264783	1858/83243
EU	0	0	0	0	342/13496
Programs MKČR (Culture)	3591/141657	3486/137515	0	0	4514/178061
Program EU-JU KDT	0	0	0	0	2449/96605
Program EU-JU ECSEL	2477/97724	2902/114488	4002/157907	4432/174848	5728/225750
COST	780/30774	120/4721	0	0	0
NPO (National plan of Renewal)	24762/976805	23823/939763	0	0	0
Eureka	1963/77436	1963/77436	0	0	0
ECSEL	6898/272114	9174/361907	10393/409988	12011/473861	5611/221365
Total in K CZK	63272	75943	54272	60924	68353
Total in EUR	3472716	2 999 840	2140956	3444873	2706028

²⁵ If the provider is from abroad, please indicate the provider's country of origin in brackets. For the determination of the country of origin of the provider, the place of residence of the provider is decisive.

²⁶ Indicate the total amount expressed in thousands of CZK and the conversion of the total amount into Euro.

²⁷ Ibid.

Table 3.3.2 - Contract research activities

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
ADWITECH system, s. r. o.	Analysis of the applicability of Angle of Arrival technology in practice			200/ 7890	200/ 7890	
Allium, s. r. o.	Supplier of development and experimental work for the PPIBK project - part 1. VZ			260/ 10256	560/ 22091	
ALSYKO security, s. r. o.	Development of an autonomous surveillance center - SV				292/ 11523	292/ 11523
ARTIN, spol., s. r. o.	Development of robot automobile operating and development of new generation of assistant systems for operating	49/ 1941	50/ 1988	50/ 1988	50/ 1988	54/ 2130
Cadwork Informatik CI AG	Software development of CAD systems and 3D data visualization applications	1560/ 61538	1560/ 61538	1560/ 61538	1560/ 61538	1560/ 61538
CAMEA, spol. s r. o.	CAMEA 2021			400/ 15779	1100/ 43393	
CAMEA, spol. s r. o.	WIM LA - Camea SV				300/ 11834	300/ 11834
CAMEA, spol. s r. o.	Intelligent Sensors for Traffic Monitoring - Camea SV				525/ 20710	525/ 20710
CESNET, z. s. p. o.	CESNET - implementation, debugging and testing.		1890/ 74556			
CESNET, z. s.r.o.	Research and development of hardware actions and computer networks security			850/ 33531		
CESNET, z. s. r. o.	Cesnet - Implementation and Debugging				850/ 33531	
CESNET, z. s. r. o.	Research and development of hardware actions and computer networks security					750/ 29586
CESNET, z. s. r. o.	Cesnet - Implementation and Debugging	1440/ 56805				
Cryze, s. r. o.	Delivery of the design and development of a system for distributing the performance of GPU servers located in data centers				499/ 19684	
CZ.NIC, z. s. p. o.	Cooperation in the development of the Turrus Omina router	546/ 21554	546/ 21554	546/ 21554	546/ 21554	546/ 21554
České vysoké učení technické v Praze	Graphical user interface for displaying the GNSS jamming output					248/ 9779

²⁸ If the client is from abroad, indicate in brackets the country of origin of the client.

Družstevní závody Dražice – strojírna, s. r. o.	An overview report on existing smart home management solutions, focusing on centralized management of energy.				80/ 3156	
Elektroline, a. s.	Research and Development of a Solution for Measuring Speed of Trams in Video			186/ 7349		
Ericsson AB	Ericsson - Speaker Change Point Detection (SCPD) in media content	1288/ 50817				
European Space Agency	Advanced compression and noise reduction for hyperspectral images data				1217/ 47998	1208/ 47653
Fairventures Worldwide FVW gGmbH	Mobile Tree Measurement			374/ 14757		
GEODROM, s. r. o.	Development of the methods for motion correction in LiDAR data			662/ 26114		
GEODROM, s. r. o.	Geodrom - LiDAR				662/ 26114	
Honeywell International, s. r. o.	Flight Deck Audio Acquisition System - R&D					243/ 9580
Honeywell, s. r. o.	Auto-Navigation for Urban Air Mobility	940/ 37081				
KRONOSPAN CR, s. r. o.	Optimization of Trucks Loading				100/ 3945	150/ 5917
KRONOSPAN CR, s. r. o.	KRONOSPAN - algorithm for optimizing the loading of material for delivery					280/ 11045
KUNST, s. r. o.	A tool for creating technological schemas of wastewater treatment plants	150/ 5917				
Logimic, s. r. o.	Services for Water Management and Monitoring Systems in Retention Basins				220/ 8679	260/ 10256
MAIA LABS, s. r. o.	SV - MAIA LABS				50/ 1972	50/ 1972
Martin Technologies Ltd.	Data Science Applications			250/ 9862	750/ 29586	
Meta IT, s. r. o.	Intelligent irrigation system - SV		112/ 4411	343/ 13547	343/ 13547	
Meta IT, s. r. o.	Universal telemedicine software libraries - SV			106/ 4180	318/ 12541	132/ 5226
Moravskoslezský automobilový klastr, z. s.	Visual Inspection		500/ 19724	600/ 23669	1000/ 39448	
National Cyber and Information Security Agency	Research into the possibilities of using biometric and other sensors in to reduce the user complexity of mobile communications			413/ 16301		
Netsearch, s. r. o.	Testing and verification of correlation data results		370/ 14585	739/ 29170		

Netsearch, s. r. o.	The purpose of the Contract is to evaluate monitoring of cryptocurrency networks					673/ 26559
Netsearch, s. r. o.	The purpose of the Contract is to evaluate the processing of password dictionaries					60/ 2367
NTT Corporation	NTT - Speech enhancement front-end for robust automatic speech recognition with large amount of training data	665/ 26235	646/ 25465	967/ 38165	908/ 35825	1060/ 41813
ONEPROVE, s. r. o	Research of computer vision algorithms, enhanced reality and related user interfaces	898/ 35432	1075/ 42391			
Platební instituce Roger, a. s.	Industrial Research and Experimental Development in the Company Platební instituce Roger a.s		108/ 4242	330/ 13029	330/ 13029	
PricewaterhouseCoopers Česká republika, s. r. o.	Delivery of a methodological framework for the development of the "Fake News" application					100/ 3945
Raytheon BBN Technologies	IARPA Machine Translation for English Retrieval of Information in Any Language – MATERIAL/FLAIR subproject	3895/ 153648	4005/ 157971	2929/ 115531		
ROI Hunter	System for Automatic Classification of Items at Web Pages		399/ 15740			
European Space Agency	BLOCKchain Enabled Deep learning Data analysis			1229/ 48487		
ŠKODA AUTO, a. s.	Development of VRUT application	1173/ 46278	710/ 28012			
ŠKODA AUTO, a. s.	Škoda Auto – Framework for Highly Integrated Advanced Systems	250/ 9856				
TESCAN 3DIM, s. r. o.	TESCAN 3DIM – Deep learning methods for 3D data analysis		1080/ 42604	540/ 21302		
TESCAN 3DIM, s. r. o.	TESCAN 3DIM – Deep learning methods for 3D image processing	870/ 34320				
TESCAN GROUP, a. s	Tescan - delivery of design and evaluation of an algorithm for separation of touching particles in automatic mineralogical analysis					450/ 17751
European Space Agency	HERA Cubesat Implementation Phase			1282/ 50559	618/ 24364	364/ 14355
University of Southern California	DARPA Low Resource Languages for Emergent Incidents (LORELEI) - Exploiting Language Information for Situational Awareness (ELISA)	1172/ 46247				
Veracity Protocol, s. r. o.	Research of computer vision algorithms, enhanced reality and related user interfaces		180/ 7101	770/ 30375	780/ 30769	780/ 30769
VirtualTraining, s. r. o.	Research and development of algorithms for processing of videosequences			1593/ 62850	1792/ 70706	

European Space Agency	BLOCKchain Enabled Deep learning Data analysis		902/ 35591			
TESCAN GROUP, a. s.	Automated mineralogical analysis				500/ 19724	
TESCAN GROUP, a. s.	Image segmentation for mineralogical analysis	375/ 14793	375/ 14793			
XIXOIO, a. s.	XIXOIO - security analysis of blockchain infrastructure and smart kontraktů			200/ 7890		
Y Soft Corporation, a. s.	Automatic calibration of the YSoft AIVA robot - analyses, solutions, and functional software					250/ 9862
Total		15522/ 612322	14584/ 575301	18303/ 722018	18515/ 730393	12577/ 496151

Note: List and describe contract research activities with a revenue in a given calendar year, regardless of the amount of financial revenue.

3.4 Research results with existing or prospective impact on society

The evaluated unit shall briefly comment on a maximum of 10 (considered most significant by the evaluated unit) research results already applied or realistically heading towards application during the period of 2019–2023, based on the overview annex table 3.4.1 (it is recommended to indicate results with a link to projects listed in indicator 3.3). The evaluated unit must demonstrate in its description that the research results have led or will soon lead to positive impacts²⁹, on society (e.g. description of how the results are used by various users, the range of persons/institutions for which the result is relevant, measurable economic impacts, etc.). The evaluated entity shall indicate in its commentary whether the gender dimension is considered in these results and discuss the impacts of the results regarding sustainability.

Maximum range 300 words/result.

Self-assessment:

In this section, we highlight individual research results that can be seen as examples of the applied ones that at the same time are outstanding achievements. These results represent not just outputs, but they can be seen as milestones underscoring FIT commitment to innovation, education, and impactful research contributing also to the FIT vision and mission.

- The IRONSTONE, software (set of), applied 2019:**
<https://www.fit.vut.cz/research/project/c27735/.en> Set of software for ICS protocol analyzers. The IRONSTONE research project is the winner in the Partnership category for the year 2021. The prize is awarded by the Technology Agency of the Czech Republic (TAČR) <https://www.fit.vut.cz/research/award/287/.en>. During the work on several projects, including project IRONSTONE, ICS protocol analyzers package IRONSTONE has been developed by FIT researchers. This result provides a way for simpler and more accurate monitoring of industrial networks for comprehensive critical infrastructure security. Critical processes such as power distribution, water management, and many similar ones depend on the proper functioning of industrial control systems. In line with the principles of Industry 4.0, this environment is becoming more open, bringing with it security risks. Network security monitoring collects metrics related to communications, network payloads, encrypted traffic sessions, and other network operations needed to detect cyber threats. Based on monitoring, patterns in network traffic that represent unwanted/unsafe traffic are detected. The package is used, e.g. by FlowMon contributing to the FIT mission in dissemination of research.
- SpeakerBeam: Speaker Aware Neural Network for Target Speaker Extraction in Speech Mixtures, publication, applied 2019** (evaluated as “1” in M1 national evaluations 2023):
<https://www.fit.vut.cz/research/publication/c159990/.en> The algorithms described in a journal publication (IEEE Journal of Selected Topics in Signal Processing, IF 8.7) and software <https://github.com/BUTSpeechFIT/speakerbeam> for separating the voice of a known speaker from a mixture with the aim of obtaining the best possible audio or the best possible results of following automatic speech recognition. The work was done in cooperation with NTT Communications Science Laboratories, in a series of five research contracts on target speaker extraction, and speaker diarization, bringing over 18.9 mil YEN (~108 K EUR in total) to FIT. Four Japanese patent applications were filed, one patent (filed by NTT baser on the rights granted by the contractual research) is already awarded and valid (JP7112348B2 <https://patents.google.com/patent/JP7112348B2/en>). This result contributed to the vision of FIT through modern world technology impact and to its mission through technology transfer.

²⁹ See Terms definition.

- Generating immersive trip photograph visualizations, Large-scale outdoor augmented reality scenes using camera pose based on learned descriptors, patents (set of 2), applied 2020, 2023:**
<https://www.fit.vut.cz/research/patent/c169864/>, <https://www.fit.vut.cz/research/patent/c169864/>)
 The patents jointly filed by FIT and Adobe. Generating immersive trip photograph visualizations – software implemented by a computing device to provide a viewer of photographs from a trip with an immersive experience as if the viewer were in the space where the trip took place. A result of cooperation with Adobe Inc. and led to US patent accepted in 2020 as US Patent US1113882B2. Large-scale outdoor augmented reality scenes using camera pose based on learned descriptors implemented by registering camera images to textured Digital Elevation Models. A result of cooperation with Adobe Inc. and led to US patent application that was accepted in 2023 as US Patent US11568642B2. The collaboration led not only to financial donations of Adobe to FIT to support research, but also to interesting publicity in independent research media (e.g. <https://www.vedavyzkum.cz/inovace-a-transfer/transfer-znalosti-a-spoluprace/vyzkumnici-z-vut-vyvinuli-ve-spolupraci-s-adobe-research-novou-metodu-pro-rozsirenou-realitu>). This collaboration is important especially in improving FIT reputation and fulfills the FIT vision in providing modern world technologies and to the mission through application in the industry.
- FireProt-ASR, software, applied 2019 (evaluated as “1” in M1 national evaluations 2023):**
<https://www.fit.vut.cz/research/product/c162472/.en>) It is one of the most prominent protein engineering methods often utilized for the design of enhanced proteins. The ancestral reconstruction algorithms implemented in the software attempt to predict the sequences of ancient genes or proteins. The ancestral sequences are the object of study in biology and protein engineering to obtain sequences with improved activity, solubility, or stability. The process of obtaining the sequences is burdened by a large amount of manual labor including the collection of biologically relevant sequences, etc., expensive and time-consuming. FireProt-ASR aims to overcome this issue by full automation of the individual steps enabling it to be used by users without deep knowledge of the required bioinformatics tools and the biological system of interest. The initial work on the software was previously reported by a conference publication in 2018 (<https://www.fit.vut.cz/research/publication/c169466/.en>). This software tool is in use, e.g., by Pfizer, at the same time, the web server probably contains the only existing protein solubility database with 14430 proteins and 33847 accesses, contributing to the reputation of FIT and also its mission in serving the society.
- k-Wave-OMP 1.3 and k-Wave-CUDA 1.3, software (set of), applied 2020**
 (previous version 1.2 evaluated as “2” in M1 national evaluations 2020):
<https://www.fit.vut.cz/research/product/c163464/.en>,
<https://www.fit.vut.cz/research/product/c163465/.en>): 3rd public release of accelerated k-Wave toolbox software. This software package provides an efficient implementation for simulating ultrasound waves propagating through soft tissues. FIT members contributed to the implementation and High-Performance Computing optimizations. Designed for systems with shared memory, such as laptops, desktops, and individual servers, as well as Nvidia GPUs, the package offers robust performance and versatility. Version 1.3 introduces several enhancements, including simulation capabilities for 2D and axisymmetric media, a new absorption type, new sources, and minor updates to the physical models. These implementations now support a well-established user base across the broad field of ultrasonics. The codes are also deployed on several supercomputers, where they are routinely used for production runs in transcranial neurostimulation treatment planning and photoacoustic imaging. K-Wave software has over 25000 users across the globe. The result “triggered” the above-mentioned project CITRUS that led to software updates. (See also <http://www.k-wave.org>).

The project supports the worldwide progress in the field contributing to the FIT vision in having an impact on the modern world technology.

- Device for sensing biometric characteristics of the human hand, patent, applied 2021:**
[\(https://www.fit.vut.cz/research/patent/c193952/\)](https://www.fit.vut.cz/research/patent/c193952/) The patent and an applied output resulting from the project TRAnser via Multinational Application eXperiments – TETRAMAX
[\(https://www.fit.vut.cz/research/project/1255/.en\)](https://www.fit.vut.cz/research/project/1255/.en). The patent has been filed 2021 and granted 2024; it is based on a functional specimen developed in 2020 in order to demonstrate and assess the practical functionality of contactless fast fingerprinting of the human hand
[\(https://www.fit.vut.cz/research/product/c164072/.en\)](https://www.fit.vut.cz/research/product/c164072/.en) regardless of the gender or race of the users. Touchless Biometric Systems AG in collaboration with whom the joint research has been performed, uses the rights of this international patent. The patent has been extended to the US patent
 [\(https://patentcenter.uspto.gov/applications/17758880/ifw/docs?application=\)](https://patentcenter.uspto.gov/applications/17758880/ifw/docs?application=) and the US patent was registered in 2024. The research led to the product 3D Fly [\(https://www.tbs-biometrics.com/en/3d-fly\)](https://www.tbs-biometrics.com/en/3d-fly) fulfilling the FIT mission in commercialization.
- Flexible lawful interception probe – Flexprobe, functional specimen, applied 2022:**
 [\(https://www.fit.vut.cz/research/product/c179457/.en\)](https://www.fit.vut.cz/research/product/c179457/.en) The functional specimen is a unique hardware device usable as a “probe” that provides high-speed network traffic analysis at the application level for precise lawful interception. It has been designed based on long-term collaboration with security agencies and as a result of the project “Flexible lawful interception probe”
 [\(https://www.fit.vut.cz/research/project/c30310/.en\)](https://www.fit.vut.cz/research/project/c30310/.en) in order to help technically support the legislative requirements for network traffic analysis. The probe works at a line rate and precisely filters network traffic based on IP addresses and application-level identifiers. Due to its high performance and many useful features, it is now used by the Police of the Czech Republic. This applied results, although it, of course, cannot have too much publicity, helps the safety of the general public and so it nicely contributes to the FIT mission.
- Perun platform, software, applied 2020:**
 [\(https://www.fit.vut.cz/research/product/c169862/.en\)](https://www.fit.vut.cz/research/product/c169862/.en) The Perun software for performance versioning and analysis is a platform for analyzing performance, detecting performance bugs and performance regression between software versions. FIT members contributed to the development of the software in collaboration with Red Hat within the Company partnership program of FIT, the development was also supported by the project AQUAS
 [\(https://www.fit.vut.cz/research/project/c28875/.en\)](https://www.fit.vut.cz/research/project/c28875/.en). Currently, Red Hat has released the tool for use by its kernel performance teams, along with the necessary training of the developers. The result got publicity also through publication at ICSME’22 (CORE A conference,
<https://www.fit.vut.cz/research/publication/c180472>). It is a good example of an Open-Source software fitting our mission, e.g., in community service.
- Bayesian HMM based x-vector clustering – VBx, software, applied 2022**
 (evaluated as “1” in M1 evaluation in national evaluations 2023):
 [\(https://www.fit.vut.cz/research/product/c168747/.en\)](https://www.fit.vut.cz/research/product/c168747/.en) The software implementing a Bayesian approach to do speaker diarization in speech processing systems using low-dimensional neural representation of speakers (x-vectors) in individual segments. It follows the FIT recipe for the Second DIHARD Diarization Challenge Track 1
 [\(https://www.fit.vut.cz/research/group/speech/public/publi/2020/landini_icassp2020_09054251.pdf\)](https://www.fit.vut.cz/research/group/speech/public/publi/2020/landini_icassp2020_09054251.pdf), where FIT was the winner. After its publication, it became a de-facto community standard, and it was integrated into numerous academic systems excellent in following DIHARD evaluations (including FIT ones). It also contributed to a number of highly cited publications, and to two contractual research

projects with international companies (Swedish Ericsson and Japanese NTT labs). Most importantly, it was adopted by Phonexia, integrated into its commercial product line and is nowadays commercialized in more than 60 countries. Two European Marie Curie Individual Fellowships revolved around VBx. The associated paper has been cited 239 times (according to Google Scholar) contributing to the FIT vision through its impact on the development of technology for the modern world.

- **Sensor Fusion Toolbox, software, applied 2023:**

(<https://www.fit.vut.cz/research/product/c185546/.en>) Software tool that includes multi-sensor fusion methods for tracking multiple objects using discrete-time optimal state estimation algorithms applicable in the field of autonomous driving. The software allows the combination of the VALEO Scala NFL sensor, RADARs and vision sensors with defined overlap and gaps in the coverage space using position and velocity estimation techniques with consideration of linear or non-linear motion dynamics. The outputs of sensory fusion are confirmed trajectories of monitored objects. The software was developed in the Laser sensor for autonomous driving of trucks (<https://www.fit.vut.cz/research/project/c32237/.en>) project FIT jointly executed with VALEO. The results of the project have been licensed by VALEO for use in their products, contributing to the technology transfer efforts by FIT and contribution to the FIT mission through application of emerging concepts in industry.

Table 3.4.1 - Overview of research results in the period under evaluation

Type of result ³⁰	Year of application	Name
Software (set of, created originally 2018, updated 2019+)	2019	The IRONSTONE project and set of software
Publication and published algorithms (created 2019, updated 2019+)	2019	SpeakerBeam: Speaker Aware Neural Network for Target Speaker Extraction in Speech Mixtures
Patent (set of 2, created 2020 and 2023)	2020, 2023	Generating immersive trip photograph visualizations, Large-scale outdoor augmented reality scenes using camera pose based on learned descriptors
Software (created 2019)	2019	FireProt-ASR
Software (set of, created 2020)	2020	k-Wave Toolbox version 1.3 (OMP), k-Wave Toolbox version 1.3 (CUDA)
Patent (applied 2021, granted 2024)	2021	Device for sensing biometric characteristics of the human hand
Functional specimen	2022	Flexible lawful interception probe-Flexprobe.
Software (created 2020)	2022	Perun: Lightweight Performance Version System
Software (created 2020)	2022	Bayesian HMM based x-vector clustering - VBx
Software (created 2023)	2023	Sensor Fusion Toolbox

Note 1: Please list and describe the results already applied in practice or heading towards application in practice with existing or prospective impact on the society (e.g. domestic or foreign patents, sold licenses, spin-offs, prototypes, varieties and breeds, methodologies, significant analyses, surveys, expert outputs for policymaking or other forms of non-publication outputs, etc.). Indirect results of research, development and creative activities with documented societal impact, e.g. expert activities, services to the public/government/scientific community, may also be reported.

³⁰ Specify the specific type of result. Add rows as needed.

TRANSFER OF RESULTS INTO PRACTICE

3.5 Transfer of results into practice

The evaluated unit shall briefly describe its system for transferring results into practice. It shall also indicate up to five of the most typical users of its results, whether in the university environment or in the non-university application/corporate sphere, detailing how it collaborates with them and how it seeks out new users (using a maximum of five specific examples).

It will also indicate whether and how it commercialises R&D&I results (e.g. selling licences, setting up start-up or spin-off companies, etc.)³¹, providing brief description of the commercialisation methods used. The effectiveness of the transfer of results and the commercialisation of R&D&I results will be described using a selection of results (max. five) listed in annex table (Table 3.4.1).³²

Additionally, the evaluated unit shall briefly comment on the funds received during the period of 2019–2023 from non-public, non-grant sources (e.g. licences sold, spin-off revenues, donations, etc.). A full summary shall be provided in annex table (Table 3.5.1).

Maximum 500 words plus 200 words for each provided example of finding a new user of results and commercialization.

Self-assessment:

In addition to the main activities in its vision and mission, education and research, FIT focuses on contractual research, licensing, and also other activities and income sources from non-public sources. While this funding represents a smaller portion of FIT overall revenue, it significantly contributes to industry collaboration and national security through contracts with security authorities." In these tasks, FIT collaborates with other units at BUT, e.g., Faculty of Business and Management, Faculty of Electrical Engineering, Faculty of Mechanical Engineering, CEITEC, etc.

For a long time, FIT is implementing a programme for support of start-ups and spin-offs (Star(t)up@FIT), which supports both student teams in creating their own IT products and services, as well as links between the results of researchers and students with the aim of commercializing these results, all in collaboration with the Department of Knowledge Transfer at BUT. The programme is mainly focused on moving a project from idea to a commercially viable product from a technical aspect and then to find a suitable business model, e.g. by finding a suitable B2C or B2B structure. Successful projects are further linked to the JIC (South Moravian Innovation Centre), which follows up on this programme by supporting the product development, investor involvement, company growth, etc. The Star(t)up@FIT programme offers everything from consultations with technology transfer experts, to networking activities, meetings, and discussions with successful company founders in the region.

Although achieving success in the commercial sphere is not an easy task, which, in addition to the immense commitment of the content creators, requires luck, some teams have succeeded, or at least developed their idea into the commercially feasible sphere (recently e.g. sensorie.cz, discio.cz, komupatrim.cz, zaitra.io), some spin-offs gained more mature status (e.g. BrnoLogic).

The examples of technology transfer methods and their practical application which are important from our point of view and that also contribute to our vision and mission, include:

³¹ In the case of military HEIs, their specific position is taken into account when evaluating the commercialisation/evaluation of R&D&I results.

³² If the commercialisation of R&D&I results is carried out in this way.

- **Contractual research with U.S. agencies (DARPA and IARPA):** With a U.S. coordinator (Raytheon BBN for IARPA Material and University of South California (USC) in L.A. for DARPA Lorelei) the contractual research is performed at FIT. Administratively and financially, they are considered contractual research but the BUT team retains full rights to the results, with the obligation of granting a license (mentioned in the projects above as well).
- **Local companies contractual research (CAMEA, Phonexia, etc.):** With local companies, we are having a good collaboration on research through joint projects, through Company partnership program of FIT but also through direct contractual research. Good examples of such research include CAMEA (several contracts on research in the field of traffic enforcement and embedded technology) or Phonexia (several contracts on licenses in the field of speech processing, see also below).
- **International companies contractual research (Honeywell, Škoda Auto, TESCAN, etc.):** Similarly, to local companies, we have a good collaboration on national and international research projects and company partnerships along with the direct contractual research. Examples include contractual research with Honeywell (e.g., on navigation of drones through video), Škoda Auto (e.g. on user interfaces, graphics, etc.), TESCAN (and TESCAN 3DIm on e.g. electron microscopy image and spectrum processing, 3D imaging), etc.
- **Foreign companies contractual research (NTT, Tencent AI, etc.):** FIT executed also direct contractual research with foreign companies, e.g. NTT Communications Science Laboratories (Japan, series of five research contracts on target speaker extraction, and speaker diarization leading to financial benefits and patents) or Tencent AI Lab Rhino-Bird contract and Gift Fund grants (“Unlocking the Potential of Unstructured or Weakly Labeled Data” and “Multichannel Speaker Recognition and Diarization in Far-field and Noisy Data” each bringing 50k USD).
- **Contracts with national and EU security bodies (Ministry of the Interior of the Czech Republic, Europol):** A significant technology transfer activities occur between FIT and national security bodies and bodies at international, typically EU level. Examples include the National Cyber and Information Security Agency (e.g. regarding using biometrics and other sensors to reduce the user complexity of mobile communications) or licensing of the ICS protocol analyzers for use by national authorities or BAZAR project results licensing to Europol and Kantonspolizei Zürich

The examples of non-public, non-grant sources that are also important from the funding point of view but that also contribute to our vision and mission, include:

- **Spin-off creation and sales (INVEA-TECH, BrnoLogic):** FIT significantly contributed to the development of INVEA-TECH company whose part FlowMon was later acquired by investors. FIT received a payment of ~750K EUR based on the sale of FlowMon in the years 2021-2023 (while the transactio between BUT and investors started earlier). The FlowMon Networks spin-off (<https://www.progress.com/flowmon>) was later acquired by Kemp and part of the technologies by Intel. New spin-offs are being founded, a good example being BrnoLogic, recently was renamed DYNANIC (<https://dyna-nic.com/brnologic-becomes-dynanic/>).
- **Licensing (Phonexia):** Direct licensing of FIT outputs to industrial partners, as an example licensing of specific language acoustic models to Phonexia. The language models were

obtained mainly through training automatic speech recognition models in various FIT and joint research projects (<https://www.phonexia.com/>)

- **Licensing through agencies (ELDA and LDC):** In case production of research data is involved, we at FIT have explored commercialization through a specialized agency - Evaluations and Language resources Distribution Agency (ELDA, France) (<http://www.elda.org/en/services-around-Irs/distribution/licensing/>) or Linguistic Data Consortium (LDC) (<https://www ldc.upenn.edu/>). These agencies take care of licensing and pay BUT agreed license fees.
- **Donations/Research awards:** TENCENT awarded FIT 50k USD donation for “Multichannel Speaker Recognition and Diarization in Far-field and Noisy Data” – a good example of this type of income; however, the FIT donors include also Adobe Systems, Google, Škoda Auto, Vigour Gama, Oracle, Omilia, and IBM Czech Republic, etc.

Table 3.5.1 - Summary of non-public revenues received during the period under evaluation

Type of revenue	Revenue (in thousands CZK/EUR)				
	2019	2020	2021	2022	2023
License sales	140 / 5523	227 / 8970	400 / 15779	628 / 24773	350 / 13807
Spin-offs	0 / 0	0 / 0	0 / 0	40 / 1578	40 / 1578
Paid courses for employees of commercial sector	0 / 0	0 / 0	0 / 0	0 / 0	114 / 4488
Consultation and advisory	0 / 0	0 / 0	19 / 757	92 / 3 645	93 / 3 653
Donations – non-investment funding of R&D	751 / 29633	269 / 10593	1162 / 45826	2436 / 96102	1235 / 48723
Donation – investment funding or R&D	0 / 0	0 / 0	207 / 8 172	0 / 0	0 / 0
Total	891 / 35156	496 / 19563	1788 / 70534	3196 / 126098	1832 / 72249

Note: Enter funds raised for R&D&I from non-public sources besides grants or contract research (e.g. licences sold, spin-off company revenues, donations, etc.) in the calendar year.

POPULARIZATION OF VAVAI

3.6 The most important activities in the field of popularization of R&D&I and communication with the public

The evaluated unit shall briefly describe its main activities related to the popularisation of R&D&I and communication with the public (e.g. popularisation lectures, citizen science initiatives, etc.) during the period of 2019–2023 and provide up to 10 examples that it considers the most significant.

Maximum 500 words plus 200 words for each example given.

Self-assessment:

FIT considers popularization one of the important and even necessary activities in the modern world. FIT employs dedicated staff to systematically and continuously inform the public about news and achievements in an accessible manner. This is accomplished via web (<https://www.fit.vut.cz/en>), all major social media (LinkedIn <https://www.linkedin.com/company/fit.vut/?originalSubdomain=cz>, Facebook <https://www.facebook.com/FIT.VUT/>, X https://twitter.com/fit_vut, as well as Instagram <https://www.instagram.com/fit.vut/>) and also participation in science popularization events.

Researchers from FIT BUT contribute to the dissemination of cutting-edge Research, Development, and Innovation (R&D&I) results in the general media. Between 2019 and 2023, R&D&I results were presented as follows:

- Over 100 press releases and articles were published, alongside hundreds of short news updates on the faculty's website (<https://www.fit.vut.cz/en>).
- The most frequently communicated topics included AI, cybersecurity, robotics and automation, data processing and visualization, high-speed networks, etc. These topics were picked up by national, regional, and specialized print media, such as MF Dnes, Hospodářské noviny, Právo, Euro, Computer, as well as online media, radio, websites, and television.

The breakdown of media coverage is as follows:

- 117 articles and mentions in print media,
- 386 mentions in online media,
- 11 television appearances and mentions on radio,

For example: Czech-Israeli University Conference (vedavyzkum.cz, 18. 5. 2023

<https://www.vedavyzkum.cz/akce?view=article&id=11256:cesko-izraelska-univerzitni-konference&catid=266>), US chip giant Nvidia starts development in Brno, will follow Intel's

activities there (e15.cz, 9. 6. 2022 <https://www.e15.cz/byznys/technologie-a-media/americky-cipovy-gigant-nvidia-rozjizdi-vyvoj-v-brne-navaze-tam-na-aktivitu-intelu-1390754>),

Who are the chip companies operating in the Czech Republic? (lupa.cz, 26. 5. 2022 <https://www.lupa.cz/clanky/byvala-tesla-roznov-optika-pro-asml-nebo-dodavky-applu-co-jsou-zac-cipove-firmy-pusobici-v-cesku/>),

CPhoto@FIT BUT researchers develop new augmented reality method, file patent jointly with Adobe Research (lupa.cz, 3. 2. 2021

<https://www.lupa.cz/aktuality/vyzkumnici-z-cphoto-fit-vut-vyvinuli-novou-metodu-rozsirene-reality-patent-podavaji-s-adobe-research/>),

Mining words from recordings where you can't hear much, says computer scientist (idnes.cz, 25. 10. 2020 https://www.idnes.cz/nastaveni-souhlasu?url=https%3a%2f%2fwww.idnes.cz%2fbrno%2fzpravy%2fjan-cernocky-rozpoznavani-hlasu-vysoke-uceni-technicke.A201023_194016_brno-zpravy_cern), or

Students invented an app that recommends a suitable movie and podcast (seznamzpravy.cz, 3. 12. 2020 <https://www.seznamzpravy.cz/clanek/studenti-vymysleli-aplikaci-ktera-doporuci-vhodny-film-i-podcast-132345>).

- Our topics are also actively communicated on social media, reaching the following audiences:
 - Twitter (nowadays X): 1,150 followers
 - LinkedIn: 1,140 followers,
 - Facebook: 5,200 followers,
 - Instagram: 2,340 followers.
- In addition, FIT newsletter, distributed to 3,000 subscribers in 2023, serves as an important communication channel. Science communication events, such as the European Researchers' Night, consistently attract high attendance, with hundreds of visitors each year.
- Annually, Excel@FIT (<https://excel.fit.vutbr.cz/>) conference on student activities showing interesting ideas, technical solutions, student research results, and hosts representatives from the industry, students from high schools accompanied by their teachers, and also general public (throughout 2019-2023, see also <https://www.fit.vut.cz/events/excel2024/.en>).
- Popularization of individual research fields, such as artificial intelligence, cultural heritage digital preservation, or robotics, as examples. In addition to scientific publishing, FIT members are often active promoters of their scientific disciplines and technical education in general, in local and international public media. We were involved in national AI days launched by brno.ai, in a series of optical-character recognition projects (e.g. PERO by Ministry of Culture ČR <https://pero.fit.vutbr.cz/about>) aiming at historical documents and hand-writing, an intensive cooperation was started with several archives and libraries, we are also active in preserving local dialects (e.g. in JARIN project supported by Ministry of Culture ČR), we are working and popularizing on speech and dialect recognition technologies leading also to an interactive map of Czech dialects. FIT members developed RUDA rescue robot and presented it at the national pavilion of EXPO 2020 in Dubai (<https://www.fit.vut.cz/fit/news/3149/.en>); RUDA, a robot that searches for people in cave-ins and avalanches, was also a part of the CZ Robot and CZ-EX Machina rotating exhibitions.
- Every year, FIT BUT participates in the nation-wide popular-science event called the Science Night (<https://www.nocvedcu.cz/en>) which takes people to the inspirational science world.
- At FIT, "Museum of Computer Technology" (<https://www.fit.vut.cz/units/museum/.en>) was built, and it is open for the public showing exhibits from the 1950s up until 1991 and later.
- In order to popularise information technology among ladies and to encourage them to study in this field to ultimately compensate for the still existing gender unbalance in the field, FIT organises the annual "(F)IT Summer School for Girls" (<https://holky.fit.vut.cz/>) and generally addresses the gender unbalance and encourages applications specifically among young ladies (<https://www.fit.vut.cz/applicants/girls/.en>). FIT also participates in the annual Girls Day event which provides girls with an opportunity to learn about the possibilities of study, employment, and research in STEM disciplines.
- At least twice a year, Student Union of FIT (<https://su.fit.vut.cz/>) in collaboration with FIT organizes an Open Day where everyone, not just the prospective students, can learn about the research carried out at FIT.

IMPLEMENTATION OF RECOMMENDATIONS

3.7 Implementation of the recommendations in Module 3

The evaluated unit will briefly describe how it has implemented the recommendations for Module 3 from the previous evaluation period, if applicable.

Maximum 1000 words.

Self-assessment:

Applied research projects:

- *Look to develop stronger links with leading companies, to encourage them to donate additional resources (hardware/software/etc.):*
 - We did work on stronger links and some of the companies are donating hardware (e.g. NXP). However, unfortunately, donations from companies are not common in a local “culture”; hopefully, this will change in the future.
- *Continue with applied research project and concentrate on increasing proportion of international projects, continue with contract research and involve mainly companies with their own R&D.*
 - We focused on international projects, as advised. The reported funding from Czech/International projects is slightly “distorted” as the contribution of the Czech money into the EU projects is shown as Czech funding. We also focused contractual research with companies active in IT Research and Development.
- *Support young entrepreneurs and define rules for sharing research results.*
 - We continued development of the program for young entrepreneurs within the Startup@FIT program. As for definition of the rules, this rendered to be not feasible as the shared results are of different kinds and require an “ad-hoc” approach.
- *Consider having a share in some products based on consultancy capacity.*
 - While we would like to have such a share, the parties that exploit consultancy deemed this unrealistic; moreover, some funding (e.g. EDIH) in fact rules this out.

Applied research results:

- *Continue technology transfer both commercial and non-commercial.*
 - We followed the advice and continued technology transfer as also described above.
- *Motivate researchers to connect with industry to transfer their proposals to products.*
 - We attempt this and it works in a few cases (e.g. we involve them in contractual research). Some, however, intentionally do not want to use their time for this.
- *Motivate researchers to interconnect basic research and applied research.*
 - We are attempting to “catalyze” interest of those close to basic research in applied research; however, this does not always work and this cannot be “enforced”.

Cooperation with non-academic environment and technology transfer:

- *Engage more closely with the Department of Knowledge Transfer at BUT (and indeed the Faculty of Business and Management) to put on further activities, such as seminars, even courses and projects, to encourage a more entrepreneurial spirit.*
 - FIT used collaboration with the Technology Transfer Office at BUT (responsible for knowledge transfer) and struggled to improve commercialization of research results through licensing, and start-up/spin-off companies, BrnoLogic being a good example (<https://www.vut.cz/vav/transfer/podnikani/start-up-spin-off/brnologic>). The faculty also partners with the Faculty of Business and Management in start-up activities and also offers courses, seminars, and projects that develop entrepreneurial skills.

- *Continue interactions with corporate sphere. Develop even more interactions with local industry.*
 - We struggled to get more in touch with local industry. A good example is e.g. deepened and repeated contractual research with TESCAN or joint research and development projects with CAMEA or BRINGAUTO. More has been done in the Company partnership program of FIT.
- *Extend focus to the other fields of research provided at the Faculty.*
 - In order to widen the focus, we do continuously advertise commercialization of results, application of the results in products, including support for foundation of start-ups and spin-off companies. While technology transfer is not the very core faculty activity, we are struggling to provide assistance and make this attractive for academics and to provide recognition.
- *Continue with technology transfer and coordinate with the university.*
 - FIT continuously actively engages in technology transfer and we are doing our best in facilitation of the transition of research outcomes and innovations into practical applications and adapting the novel approaches and processes introduced by Technology Transfer Office at BUT. This includes collaboration with industry partners, support for start-ups and spin-off companies, and intellectual property protection through patents and licensing.
- *Continue support of graduates in entrepreneurship a collaboration with companies founded by graduates.*
 - We did increase such support; companies can now better use the Company partnership program of FIT, we have also added new level of the Company partnership program of FIT for “starting” companies. Moreover, the companies can use FIT Alumni Network for this purpose (open for alumni in general, not only for companies). In addition, FIT has a strong bond to JIC (South-Moravian Innovation Center) that has a multi-year track of growing spin-off companies.
- *Measure your impact at the local and regional level considering start-ups and companies established by graduates based on their findings while studying.*
 - We did question students regarding their willingness to start businesses and adjusted the Startup@FIT and partnership program based on the findings.
- *Develop strategy for increasing the number of graduates who acknowledge FIT in their business.*
 - We aim to achieve this through a good relationship, help with entrepreneurship, and collaboration. We involve students in interesting projects during their studies with the expectation of continued cooperation in the future. We also involve Student Union (<https://su.fit.vut.cz/>) and BUT Alumni Network (<https://www.vutalumni.cz/>).

Recognition by the scientific community:

- *More staff members should be encouraged to play a more active role. Activities, such as being an assistant editor on a top journal can be time consuming, and thus in order to be encouraged, staff should receive some recognition of this time requirement (if this is not already happening).*
 - The encouragement is (and was during the previous review) being performed through our evaluation system, even with some financial impact; anyhow, we increased its impact along with non-financial motivation of general publishing activities.
- *Researchers should also take more advantage of the collaborative projects and their own academic and industrial networks in order to present their work more widely.*

- We agree on this, attempting to promote this but in the end, this individually depends on the researchers.
- *Motivate academic staff to serve the community and be active in the R&D&I community, especially to some small extent also in the innovation community.*
 - The motivation is through our evaluation system and within the academic freedom in the direction of individual academic activities, in our evaluation system, we emphasize academic activities that lead to engagement and increased activity in the research community. Moreover, we often offer our premises and capacity for organization of IT oriented actions/conferences in which our academics help and participate, and this indirectly increases the community activities. Additionally, we encourage interaction of our staff with the community also through the FIT Alumni Network and various events, such as Startup@FIT, offering mentoring, workshops, networking events, and investors connection not only to students but also to staff.

Popularization of R&D&I:

- *Focus on one or two areas where you excel and provide more services to the community.*
 - We did define the direction of the faculty; however, the research focus is evolving according to the researchers, their academic freedom, and the projects accepted for funding on which we are financially dependent. Our goal is to support research in which we achieve excellent results, and which has the most significant impact on the community. At the same time, we do not neglect other branches of research that naturally complement the core focus of the faculty.

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)
Star(t)up@FIT	3.5, 3.7	https://www.fit.vut.cz/study/startup@fit/.en#startup
Partnership with FIT	3.7	https://www.fit.vut.cz/cooperation/partnership-with-fit/.en
BUT Alumni Network	3.7	https://www.vutalumni.cz/
FIT Student Union	3.7	https://su.fit.vut.cz/
FIT at LinkedIn	3.6	https://www.linkedin.com/company/fit.vut/?originalSubdomain=cz
FIT at Facebook	3.6	https://www.facebook.com/FIT.VUT/
FIT at X (Twitter)	3.6	https://twitter.com/fit_vut
FIT at Instagram	3.6	https://www.instagram.com/fit.vut/

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: Faculty of Mechanical Engineering (FME)

FORD: 2 - Engineering and technology

SOCIAL CONTRIBUTION OF THE EVALUATED UNIT

3.1 Introductory information about the unit under evaluation

The evaluated unit will describe its mission and vision and provide a general self-reflection of the societal contribution of R&D&I, along with its long-term goals in the fields it develops. The distribution of research activities by type of research will also be commented on.¹ The evaluated unit will describe its organisational structure and size (staffing, number of students, number of study programmes implemented, etc.) based on the data provided in annex tables 3.1.1 to 3.1.6.

Maximum 1000 words.

This is a non-rated indicator that serves as an introduction to the evaluated unit, providing context for data in indicators 3.2-3.7.

Self-assessment:

The Faculty of Mechanical Engineering (FME for short) is the largest mechanical engineering faculty in the Czech Republic. [The fundamental mission](#) is to ensure high quality education through the integration of multidisciplinary education and research, to contribute to solving the significant challenges that society will face, making the faculty an attractive educational institution and a natural centre of top-level science and research in its fields not only in the Czech Republic but also on a Central European scale. We have the ambition to be an internationally recognised technical faculty that: uses modern teaching methods; is accommodating and attractive for students, both domestic and international; employs high-quality and motivated teachers and researchers; is significantly involved in the development of cutting-edge technologies with international reach; influences the direction and development of the technology fields; offers new interesting modern study fields developed in cooperation with leading corporations; closely partners with major industrial corporations.

Students are taking part in international competitions with high achievements and are comparable with the teams of top universities. PhD students regularly present their results at internationally recognized conferences and often receive awards for young researchers. PhD students are highly appreciated by excellent institutions abroad during their internships. The quality of the graduates of the FME is also confirmed by the fact that it has already managed to win [the School Recommended by Employers](#) award seven times in a row (for the years 2016-2023). This award is given by the Employers' Club of the Czech Republic.

¹ Basic, applied, contract, artistic research (see Definition of Terms in Methodology HEI2025+).

In recent years, mechanical engineering has been one of the most sought-after fields on the labour market. This is confirmed by the inquiry of our students from leading companies as Škoda Auto, Škoda Digital, Thermo Fisher Scientific, Honeywell, Tescan, Daido Metal etc.

We work closely with companies, which means that students often solve real-life problems through problem-based learning. Every year we organise the [Industrial Enterprise Prize](#), where corporate partners judge the best final theses written each year. We consider the development of relationships and establishing new collaborations with partners from the industrial sector to be extremely important in order to prepare our students well for practice.

The Faculty of Mechanical Engineering has 13 institutes and Heat Transfer and Fluid Flow Laboratory. We established R&D centre called [NETME](#) (New Technologies for Mechanical Engineering) that represents platform for excellent research to strengthen the [research competences](#) through cooperation of those faculty units. Faculty of Mechanical Engineering was also intensively participating on the foundation [of the Central European Institute of Technology \(CEITEC\)](#). Researchers from Institute of Physical Engineering (IPE) and Institute of Materials Science and Engineering played a key role in the establishment of this centre of excellence, including the design of the shared core facility clean-room [CEITEC Nano – Research Infrastructure](#) (30 mil. EUR), unique in Central Europe, and setting up the rules of its utilization. Since the beginning until now, the director of IPE, Tomáš Šíkola, has been the coordinator of this CEITEC RP. Further, the PI of the Institute, Michal Urbánek is the head of the CEITEC Nano RI. A number of researchers from both institutes are involved in the work of the centre as part of CEITEC's Advanced Nano and Microtechnologies and Advanced Materials Research Programmes and some of them are heads of research groups ([Experimental Biophotonics](#), [Fabrication and Characterisation of Nanostructures](#), [Advanced Instrumentation and Methods for Materials Characterization](#), [Advanced Ceramic Materials](#), [Molecular Nanostructures at Surfaces](#), [Nanomagnetism and Spintronics](#), [Advanced Multifunctional Ceramics](#). Both [CEITEC \(BUT institute\)](#) and [NETME \(FME research centre\)](#) are of crucial importance and an important complement to the activities of the students and PhD students as well as the academic staff of the FME, as they allow to choose the appropriate environment, equipment and material background according to their creative individual ideas.

The Faculty of Mechanical Engineering has long been holding a leading position among engineering faculties and research institutions in the Czech Republic as to the quality of publications. It is proved by highly cited papers (according InCites) that received enough citations to place it in the top 1% of the academic field of Engineering based on a highly cited threshold for the field and publication year. The researchers from the Faculty of Mechanical Engineering published 17 out of 74 highly cited papers in the field of Engineering in the Czech Republic during the evaluated period.

The outstanding quality of the R&D&I activities of FME was proved through the [EVALUATION OF RESEARCH, OTHER CREATIVE ACTIVITIES, AND DOCTORAL STUDIES AT BUT 2024](#). The international evaluators confirmed that vast majority of the Evaluated Units (Institutes or Laboratory) address relevant and current research topics in its field and demonstrates outputs that align **with a very good standard in European comparisons (A2)**.

Research teams at FME participated in R&D projects obtained in public competitions of domestic and EU providers, e.g. the Technology Agency of the Czech Republic, the Czech Science Foundation, the Ministry of Industry and Trade, etc. Dozens of new projects were launched each year, among them also international projects from the Horizon Europe programme where the Faculty of Mechanical Engineering is a coordinator and works together with prestigious foreign universities.

Research at FME is focused in accordance with [Key strategic areas of research at BUT](#). The main field of FORD 2, Engineering and technology, in [FME conditions](#) comprises practically all sub-fields 2.1 to 2.9 and: [Advanced manufacturing technologies](#), [Advanced Materials](#), [Aerospace Technology](#),

Artificial Intelligence, Automotive and Electromobility, Biomedical Engineering, Circular Economy, Cybersecurity, Digitalization and Industry 4.0, Energy efficient Buildings, Energy Storage, Environmental Engineering, Hydrogen Technology, Microscopy, Nanomaterials, Nuclear Energy, Photonics and Quantum Technologies, Reducing the Carbon Footprint, Renewable Energy Sources, Semiconductor Technologies, Surface Engineering, Water Conservation.

In view of the significance of the focus of FME research specialization, the social/economic impact is crucial especially in relation to the fields where R&D results are applied. These fields form a substantial part of the Czech economy – in particular the automotive segment and its components, the aerospace industry, railway and rail vehicles and power engineering, metallurgy, as well as medical applications.

Table 3.1.1 - Staffing per FTE²

Academic / professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	35.0/0.4	34.3/0.3	34.9/0.3	35.3/0.2	35.6/0.2	175.1/1.3
Associate Professor	77.8/2.5	79.9/2.7	78.7/3.1	81.7/3.2	79.4/3.2	397.6/14.7
Assistant Professor	138.2/22.8	152.2/22.1	161.8/21.7	157.4/19.4	162.4/21.5	772.0/107.5
Assistant	17.8/6.1	28.4/8.0	36.4/9.1	41.6/8.8	44.2/9.2	168.4/41.2
R&D Personnel ³	1/0	1/0	1/0	0/0	0/0	3/0
Researchers in other categories ⁴	54.9/5.0	38.0/3.1	31.1/2.9	71.9/7.2	61.8/7.6	257.6/25.9
Technical and economic staff ⁵	236.1/94.9	231.5/97.6	213.8/101.4	175.2/95.4	152.7/92.8	1009.2/482.2
Scientific, research and development staff involved in teaching activities	5.0/0	5.5/0	6.1/0.8	6.6/1	5.7/1	28.9/2.8
Early career researchers ⁶	9.6/0	16.7/3	13.0/3.0	14.1/2.7	15.27/1.9	68.7/10.6
Total⁷	575.4/131.7	587.5/136.8	576.9/142.3	583.8/138.0	557.1/137.4	2880.7/686.1

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

² The average number of hours worked is calculated as the ratio of the total number of hours actually worked during the reference period, from 1 January to 31 December, by all staff (including agreement on work activity, excluding agreement on work performance) to the total annual working time pool per full-time employee. The full-time status of the worker in the evaluated unit is always reported. If an employee holds more than one type of full-time job within the evaluated unit, the total sum of the two shall be reported.

³ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

⁴ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

⁵ Who participates in the management and support of R&D&I in the institution.

⁶ See Definition of Terms in Methodology HEI2025+.

⁷ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

3.1.2 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2019 (numbers of physical employees and personnel)⁸

Academic / professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	1	0	9	0	17	1	18	0
Associate Professor	0	0	3	0	39	1	15	0	21	1	21	0
Assistant Professor	5	0	72	6	64	16	8	2	9	3	3	0
Assistant	6	1	8	1	8	3	2	1	2	1	0	0
R&D Personnel ⁹	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁰	23	0	17	4	7	1	0	0	0	0	3	0
Technical and economic staff ¹¹	75	18	78	23	65	39	37	19	26	11	9	1
Scientific, research and development staff involved in teaching activities	0	0	0	0	0	0	0	0	3	0	2	0
Early career researcher ¹²	0	0	13	0	0	0	0	0	0	0	0	0
Total ¹³	109	19	191	34	184	60	71	22	78	17	56	1

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D Personnel, Researchers in other categories and Technical and economic staff are mutually exclusive, i.e. one staff member is reported in only one category. The categories of scientific, research and development staff involved in teaching activities and early career researchers are reported collectively for all the above-mentioned categories.

3.1.3 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2023 (numbers of physical employees and personnel)¹⁴

Academic / professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	4	0	7	0	12	0	22	1
Associate Professor	0	0	6	0	37	3	21	0	14	1	21	0
Assistant Professor	2	0	63	10	85	14	19	2	8	2	5	2
Assistant	29	3	20	1	10	5	2	0	2	2	1	0
R&D Personnel ¹⁵	0	0	0	0	0	0	0	0	0	0	0	0

⁸ The total number of employees/workers as of 31st December of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

⁹ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁰ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹¹ Who participates in the management and support of R&D&I in the institution.

¹² See Definition of Terms in Methodology HEI2025+.

¹³ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I Personnel, Researchers in other categories and technical and economic staff.

¹⁴ The total number of employees/workers as at 31.12. of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

¹⁵ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

Researchers in other categories ¹⁶	41	10	37	2	19	3	7	0	1	0	4	0
Technical and economic staff ¹⁷	13	4	28	13	57	39	40	29	23	13	9	4
Scientific, research and development staff involved in teaching activities	0	2	0	0	3	1	0	0	1	0	0	0
Early career researcher ¹⁸	0	0	20	2	0	0	0	0	0	0	0	0
Total¹⁹	85	19	174	28	215	65	96	31	61	18	62	7

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

Table 3.1.4 – Students

Type of study	2019		2020		2021		2022		2023		Total	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Undergraduate	2578	309	2680	263	2520	227	2283	209	2232	207	6318	633
Master's ²⁰	1309	209	1289	211	1279	211	1086	143	978	111	3240	474
Doctoral	323	43	350	51	350	43	330	47	307	46	585	90
Lifelong Learning Courses												
Total	4210	561	4319	525	4149	481	3699	399	3517	364	10143	1197

Table 3.1.5 - Study programmes in Czech/English

Type of study programme	Total ²¹ / Of which professional study programmes											
	2019		2020		2021		2022		2023		Total	
Undergraduate	6/2	0/0	6/1	0/0	8/1	1/0	8/1	1/0	8/1	1/0	11/3	1/0
Master's	4/3	0/0	4/3	0/0	18/3	0/0	18/4	0/0	17/4	0/0	20/7	0/0
Doctoral	5/1	0/0	6/2	0/0	7/4	0/0	7/6	0/0	7/5	0/0	12/8	0/0
Lifelong Learning courses												
Total	15/6	0/0	16/6	0/0	33/8	1/0	33/11	1/0	32/10	1/0	43/18	1/0

Note: For each SP type, enter the number of SPs in Czech language in the first cell and insert the number of SPs in English language after the slash in the same cell (e.g. 15/3), enter the number of professional SPs in Czech language in the second cell and insert the number of professional SPs in English language after the slash. Follow a similar procedure in the last column of the table (Total).

¹⁶ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹⁷ Who participates in the management and support of R&D&I in the institution.

¹⁸ See Definition of Terms in Methodology HEI2025+.

¹⁹ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

²⁰ All master's degree students are listed, regardless of the length of their programme of study.

²¹ The total number of study programmes for which admissions have been announced in a given academic year.

3.1.6 – R&D&I capacities

R&D&I field	FORD	FORD share [%]	Predominant type of research	Total share of industry group [%]
1. Natural Sciences	1.1 Mathematics	5	Basic Research	15
	1.2 Computer and information sciences	2	Basic Research	
	1.3 Physical sciences	5	Basic Research	
	1.4 Chemical sciences	1	Balanced basic and applied research	
	1.5 Earth and related environmental sciences	1	Basic Research	
	1.6 Biological sciences	1	Basic Research	
	1.7 Other natural sciences	0	N/A	
2. Engineering and Technology	2.1 Civil engineering	1	Applied Research	85
	2.2 Electrical engineering, Electronic engineering, Information engineering	4	Balanced basic and applied research	
	2.3 Mechanical engineering	52	Balanced basic and applied research	
	2.4 Chemical engineering	5	Balanced basic and applied research	
	2.5 Materials engineering	9	Balanced basic and applied research	
	2.6 Medical engineering	1	Basic Research	
	2.7 Environmental engineering	9	Balanced basic and applied research	
	2.8 Environmental biotechnology	1	Balanced basic and applied research	
	2.9 Industrial biotechnology	1	Applied Research	
	2.10 Nanotechnology	1	Basic Research	
3. Medical and Health Sciences	2.11 Other engineering and technologies	1	Basic Research	
	3.1 Basic medicine		N/A	
	3.2 Clinical medicine		N/A	
4. Agricultural and veterinary sciences	3.3 Health sciences		N/A	
	4.1 Agriculture, Forestry, and Fisheries		N/A	
	4.2 Animal and Dairy science		N/A	
	4.3 Veterinary science		N/A	
5. Social Sciences	4.4 Other agricultural sciences		N/A	
	5.1 Psychology and cognitive sciences		N/A	
	5.2 Economics and Business		N/A	
	5.3 Education		N/A	
	5.4 Sociology		N/A	

	5.5 Law		N/A	
	5.6 Political science		N/A	
	5.7 Social and economic geography		N/A	
	5.8 Media and communications		N/A	
	5.9 Other social sciences		N/A	
6. Humanities and the Arts	6.1 History and Archaeology		N/A	
	6.2 Languages and Literature		N/A	
	6.3 Philosophy, Ethics and Religion		N/A	
	6.4 Arts (arts, history of arts, performing arts, music)		N/A	
	6.5 Other Humanities and the Arts		N/A	
Total		100 %	-	100 %

RECOGNITION BY THE RESEARCH COMMUNITY

3.2 Recognition by the research community

The evaluated unit will briefly comment on its position in the research community. It shall consider individual and other prestigious R&D&I awards, participation of its academic staff in the editorial boards of international scientific journals, elected membership in professional societies, major invited lectures given by the evaluated unit's academic staff abroad or by foreign scientists and other relevant guests at the evaluated unit. Additionally, it will address the involvement of staff in the evaluation of national or European project/programme calls over the period of 2019–2023 based on the data provided in annex tables 3.2.1 to 3.2.5 (max. 10 most relevant items). If necessary, the evaluated unit shall list any additional services to the scientific community that it considers relevant.

Maximum 1000 words.

Self-assessment:

High-quality basic and applied research is naturally accompanied by various forms of recognition by the international community. Academics are members of the editorial boards of international scientific journals, are invited to international conferences and workshops to present their achievements and hold leading positions in the bodies of foreign scientific societies. The successful organization of international conferences attended by renowned foreign experts also attests to the quality and reputation of the staff. The researchers from FME published more than 350 papers annually in peer-reviewed journals (the majority in Q1) during the evaluated period. Moreover, our researchers published 17 out of 74 highly cited papers (that received enough citations to place it in the top 1% of the academic field of Engineering) in the field of Engineering in the Czech Republic. Two papers are even labelled as “hot papers” that received enough citations to place it in the top 0.1% of papers in the academic field of Engineering. Professor Jiří Jaromír Klemes, from our Faculty, has been named on the annual [Highly Cited Researchers 2020](#), 2022 and 2023 list from Clarivate Analytics.

The outstanding position of FME academic staff in the research community is documented by elected positions in R&D boards such as Expert Round Table (ERT) Member at European Commission in the field of AI & Robotics, member of the Scientific Board of the Czech Science Foundation, member and vice-president of the Presidium of the Czech Science Foundation, National Management Committee for COST Action, Members of the evaluation Panels and Discipline Committee for Technical Sciences in the Czech Science Foundation.

The obtained foreign and Czech prestigious individual awards represent a proof of an outstanding quality of academic staff and students of FME. At the international level, this concerns in particular the prestigious Red Dot Design Award and awards for best publication, conference presentation or poster.

International activities of FME researchers represent one of the key areas of R&D. Participation of academic staff in the editorial boards of prestigious international scientific, invited lectures abroad as well as elected membership in scientific societies represent an appreciation of the professional qualities of the employees and the reputation of the academic institution. In total, during the reporting period there were the following achievements:

- 1) 53 participations of academic staff in the editorial boards of international scientific journals;
- 2) 152 invited lectures of academic staff of the evaluated unit abroad at conferences or universities;
- 3) 650 lectures by foreign scientists and other guests relevant to R&D&I at FME or conferences organised/co-organised by FME;
- 4) 32 elected memberships in scientific societies.

In addition, FME has a tradition of organizing international conferences, e.g.:

- **Sustainable Process Integration Laboratory (SPIL) Scientific Conference 2019-2023**
A yearly conference organised by SPIL, where international researchers, students and representative of industries are gathered for knowledge exchanging. World leading researchers are invited as the speaker to provide the up-to-date insight of their respective expertise. It serves as a networking platform for collaboration on sustainability research.
- **The 8th Conference on Applied Geometric Algebras in Computer Science and Engineering AGACSE 2021**
The conference has three main goals: To promote the development of the geometric algebra and geometric calculus; to spread geometric algebra technologies within industry and business by showing a range of applications (image processing, computer vision, robotics, flight navigation, molecular geometry, etc.) and to make progress on the inclusion of geometric algebra ideas into the mathematics, physics, computer science and engineering curricula.
- **The 10th International Conference on Materials Structure & Micromechanics of Fracture 2022**
The basic idea of the conference is to get together an international society of materials scientists dealing with the advanced theoretical and experimental methods applied to modelling and investigation of materials structure and fracture. Therefore, appropriate sections and sessions were arranged according to the research approaches in contrast to the classical manner according to either material- or fracture classes.
- **SPACE WEEK 2022**
The aim of the event is to present the potential of Czech universities in the area of space education and research. The event in the format of roundtable brings together representatives of universities, guests from ESA, as well as companies, in particular those associated in the Brno Space Cluster to talk about challenges and roles of the university education and research to support the sustainable growth, boosting job creation and speeding up a mass-market uptake in the space sector.
- **Engineering Mechanics International Conference 2019-2023**
The annual Engineering Mechanics conference promotes the exchange and dissemination of knowledge and recent advances in a diverse range of topics, including (but not limited to): Biomechanics, Dynamics, Fluid Mechanics, Fracture Mechanics, Kinematics, Mechanics of Solids, Mechatronics, Reliability of Structures, Technological Processes, Thermomechanics.
- **Czech-Japan Tribology Workshop 2019 and 2023**
At this event, members of the tribology groups presented contributions from the field of rail transport, elastohydrodynamic lubrication and biotribology. The topics of the lectures focused on the issue of lubricant replenishment in rolling bearings, the effect of unsteady conditions on the behavior of the EHD contact, the influence of friction modifying materials in the wheel-rail contact, lubrication of hip joint replacements and the influence of the placement of the joint socket on implant wear.
- **Foundry days 2019 and 2021-2023**
The annual conference dedicated to foundry issues is the oldest regularly held industrial conference in the Czech Republic, attracting hundreds of professional participants from the entire foundry industry.
- **Koka2023**
The conference focuses on current research carried out at universities and in industry. The aim of the conference is to provide a mutual exchange of information related to research methods, teaching methods, computational and modelling methods, research results on internal combustion engines and alternative propulsion, but also to provide information on technical facilities for vehicle and engine testing, data collection and processing.

- **UNIVNET 2022**

These events have become a place of mutual exchange of views, experiences and new scientific knowledge of experts dealing with environmental, technical, economic and legislative aspects of environmental protection. The main focus of UNIVNET 2022 was "Innovative machines and technologies in circular economy environment".

Table 3.2.1 - Prestigious R&D&I awards granted during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the award	Awarding institution
Hájková Karolína	C-IDEA Silver Award in 2021 - SNOUTY: Design of wheelchair for disabled dogs	C-IDEA International Design Union
Vladimír Haltof, Ph.D.	Design Concept – Red Dot Design Award 2020, Pealock sports equipment smart lock design	Red Dot
Professor Karel Maca	Fellow of ECERS (year 2019)	European Ceramic Society (the first Czech scientist to receive this Award)
Assoc. Prof. Pavel Rudolf.	2021 - Gold Medal of International Industrial Fair: The new technology for water purification using cavitation and low-temperature plasma	BVV Trade Fairs Brno
Assoc. Prof. Michal HOLUB	2021 - Gold medal at the International Industrial Fair in Brno: BUD 100 multi (in cooperation with TOS Čelákovice)	BVV Trade Fairs Brno
Jan Vetiška, Ph.D.	2019 - Gold medal at the International Industrial Fair in Brno: Digital twin of a production cell – virtual commissioning in the category Innovation in Automation Technology and Industry 4.0	BVV Trade Fairs Brno
Assoc. Prof. Michal HOLUB, et al.	Innovation Award 2023: successful commercialisation of the award-winning exhibit BUD 100 multifunction grinder with the multifunction grinder (in cooperation with TOS Čelákovice)	Association of Innovative Entrepreneurship CR
Xuexiu Jia, Ph.D.	Water 2022 Travel Awards	Water journal
Professor Miloslav Druckmüller	František Nušl award that aims to recognize important individuals for their lifelong scientific, pedagogical, popularization or organizational work in astronomy.	The Czech Astronomical Society
Professor Martin Vrbka	Czech Science Foundation President's Award that honours exceptional achievements in grant projects completed in the previous year	Czech Science Foundation

Note: Provide up to 10 examples.

Table 3.2.2 Participation of academic staff of the evaluated unit in editorial boards of international scientific journals during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of scientific journal, ISSN
Professor Martin Hartl	Friction , ISSN 2223-7690 – D1 category WoS - ENGINEERING, MECHANICAL
Professor Ivo Dlouhý	Engineering Fracture Mechanics , ISSN 0013-7944 – Q1 category WoS - MECHANICS
Assoc. Prof. Lubomír Klimeš	Sustainable Cities and Society , ISSN 2210-6707 – D1 category WoS - CONSTRUCTION & BUILDING TECHNOLOGY
Professor Jiří Klemeš	Journal of Cleaner Production, ISSN 0959-6526 – D1 category WoS - ENVIRONMENTAL SCIENCES
Professor Jiří Klemeš	Resources, Conservation and Recycling, ISSN 0921-3449 – D1 category WoS - ENGINEERING, ENVIRONMENTAL
Pavel Řehák, PhD	Advances in Difference Equations, ISSN 2731-4235 – D1 category WoS - MATHEMATICS
Professor Ivo Dlouhý	International Journal of Applied Ceramic Technology , ISSN 1546-542X – Q2 category WoS - MATERIALS SCIENCE, CERAMICS
Professor Radim Kocich	Materials, eISSN 1996-1944 – Q1 category WoS - METALLURGY & METALLURGICAL ENGINEERING
Assoc. Prof. František Lízal	Results in Engineering, ISSN 2590-1230 – D1 category WoS - ENGINEERING, MULTIDISCIPLINARY
Xuexiu JIA, Ph.D.	Journal of Cleaner Production, ISSN 0959-6526 – D1 category WoS - ENVIRONMENTAL SCIENCES

Note: Please provide up to 10 examples of academic staff participation in editorial boards of international scientific journals (e.g. editor, editorial board member, etc.).

Table 3.2.3 The most important invited lectures delivered by the academic staff of the evaluated unit at foreign institutions during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Invited lecture title	Name of host institution, or name of conference or event	Year
Assoc. Prof. Roman Gröger	Empirical ionic-covalent model of GaN with self-consistent charge transfer	University of Cambridge, UK	2021
Professor Karel Maca	Processing and properties of structural and functional ceramics at Brno University of Technology	Conference Plenary lecture, Advanced Ceramics Conference, September 23-25, 2019, Belgrade, Serbia	2019
Assoc. Prof. Martin Pavlas	The Role of Waste-to-Energy within the Circular Economy Concept - Recent Advances in Simulation and Optimization Approach	Conference Plenary Talk, 7th International Conference on "Energy, Sustainability and Climate Change" ESCC 2020 Skiathos, Greece,	2020
Assoc. Prof. Vítězslav Máša	The Best Way to Improve the Energy Efficiency of a Small or Medium Industrial Enterprise	Conference Plenary Talk, 7th Int. Conference on "Energy, Sustainability and Climate Change" ESCC 2020, Greece,	2020
Professor Petr Stehlík	Conceptual and complex approach contributing to energy self-sufficiency	International Conference PRES 2023, Guest of Honours Invited Lecture, Greece	2023

Xuexiu Jia, PhD	Overview of Water Use in Renewable Electricity Generation	Conference keynote speaker at the ICLCA conference (International Conference on Low Carbon Asia)	2021
Assoc. Prof. František Šebek	Ductile fracture predictions for 2024-T351 aluminium alloy	North Carolina State Univ.	2021
Assoc. Prof. Petr Vašík	Quantum generative model for molecule's ground state calculation	University of Cambridge, UK	2023
Professor Miroslav Jícha	Numerical investigation of liquid dispersion in rotating packed bed	Technical university Dortmund	2022
Assoc. Prof. Stanislav Věchet	Recent Advances in Mobile Robotics Research	National Cheng-Kung University NCKU, Taiwan	2022

Note: Provide up to 10 examples.

Table 3.2.4 - The most important lectures by foreign scientists and other guests relevant to R&D&I at the evaluated unit during the evaluation period

Name, surname and title(s) of the lecturer	Lecturer's employer at the time of the lecture	Invited lecture title	Year
Professor Marcus Reppich	Augsburg University of Applied Sciences, Germany	Balancing in process and energy systems	2023
Mario Guagliano, prof.	Politecnico di Milano, Italy	From fatigue to surface functionalization, the multiple challenges of peening treatments	2022
Masao Obata, Dr.	Kanazawa University, Japan	Quasiparticle self-consistent GW approach: application to Ni ₂ MnGa alloy	2023
Professor Jia-Chang Wang	Dept of Mechanical Engineering / Institute of Mechatronic Engineering, National Taipei University of Technology, Taiwan	3D printing of ceramic structure	2023
Professor Kwang-Chun PARK	Center for Aerospace Structures University of Colorado, USA	Method of Localized Lagrange Multipliers and its Recent Applications	2019
Professor Tasnim Hassan	North Carolina State University, USA	Development of a multiaxial miniature testing system with high temperature and insitu scanning electron microscope testing capabilities	2019
Julie Gorgemenas	Westinghouse Electric Company, Belgium	AP300 SMR: Going Small, Challenges and Opportunities	2023
Mose Rossi, Dr.	Univ. Politecnica Della Marche, Italy	Energy research with focus on hydrogen	2022
Professor Joan Lasenby	University of Cambridge, UK	Derivatives in Geometric Algebra	2023
Zifan Wang, Ph.D.	University of Oxford, UK	A multi-disciplinary approach to the microcosmos: Physics, Software Engineering, Materials Science, and Solid Mechanics	2022

Note: Provide up to 10 examples.

Table 3.2.5 - Involvement in the evaluation of national/European research project/programme calls relevant to the R&D&I area at the unit during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the research project/programme call	Name of the contracting authority/guarantor of the project/programme call	Year
Assoc. Prof. Jakub Kůdela	HORIZON-MSCA-2023-PF-01	European Research Executive Agency	2023
Assoc. Prof. Zdeněk Hadaš	ANR - CHIST-ERA	French National Research Agency ANR	2019
Assoc. Prof. František Lízal	Discovery Grant Matida, Edgar (Carleton University)	the Natural Sciences and Engineering Research Council of Canada (NSERC)	2022
Vladimír Brummer, PhD	HORIZON - Marie Skłodowska-Curie Actions Postdoctoral Fellowships 2023	European Commission –European Research Executive Agency	2023
Professor Ivan Křupka	GRF / ECS projects	the Research Grants Council (RGC) of Hong Kong	2019-2022
Marek Vondra, PhD	Horizon Europe Postdoc. Fellowships	European Commission	2023
Professor Jiří Burša	8th call of Researcher teams' projects	Research Council of Lithuania	2019
Martin Zelený, PhD.	PRELUDIUM	National Science Centre, Poland (NCN)	2022
Pavel Doležal, PhD	SAS Projects	Slovak Academy of Sciences	2019-2023
Professor Ivo Dlouhý	APVV projects	Slovak Research and Development Agency	2019-2023

Note: Provide up to 10 examples.

RESEARCH PROJECTS

3.3 Research projects

The evaluated unit shall list at most 10 (considered most significant by the evaluated unit) research projects/activities (regardless of whether they are supported by public funds or based on contract research²²) that it has implemented or participated in during the period of 2019–2023²³. This should be done from the full list in annex tables (Table 3.3.1-3.3.2)²⁴, regarding particularly the results achieved or the application potential of the projects. The unit should also describe how the research projects contributed to the mission and purpose of the evaluated unit. If the evaluated unit has been a participant in listed project, it shall indicate which other entities were involved and describe its contribution to the project. The interdisciplinary aspects of the projects will also be commented on, along with any collaboration with other units of the evaluated HEI.

Maximum 300 words per project.

Self-assessment:

In the evaluating period researchers from FME took part in 21 international EU projects (H2020, Horizon Europe, Research Fund for Coal and Steel, Visegrad Fund, Interreg and European Space Agency). Moreover, a number of projects supported by the Czech Science Foundation (54 projects), the Technology Agency of the Czech Republic (159 projects), the Ministry of Education, Youth and Sports (21 projects), Ministry of Industry and Trade (27 projects) etc. Among them, there are outstanding projects focused on excellence research in both basic (Johannes Amos Comenius Programme, specific call Excellent Research – Mechanical Engineering of Biological and Bio-inspired Systems MEBioSys project) and applied research (Technology Agency of the Czech Republic, National Centres of Competence (NCC): NCC of Mechatronics and Smart Technologies for Mechanical Engineering MESTEC, NCC for Aeronautics and Space, Božek Vehicle Engineering NCC, Centre of environmental research: Waste management, circular economy and environmental security (CEVOOH), NCC for Energy II and National Hydrogen Mobility Center.

As it was already mentioned above researchers from two FME institutes are double affiliated, and a significant part of their projects has been submitted via CEITEC BUT. Here, there are some of such important EU projects (in addition to the PETER project described in more details in this chapter):

- "Strengthening Nanoscience and Nanotechnology Research at CEITEC – SINNCE", H2020 – Widespread -Twinning, 2018 – 21; Coordinator: T. Šikola, CEITEC BUT, 546 150 EUR
- Back for the Future: Upgrading the Centre of Excellence for Advanced Materials and Nanostructures – Back4Future, H2020 – Widespread – Teaming, 2017-2019; Coordinator: T. Šikola, CEITEC BUT, 133 554 EUR
- Affordable smart GaN IC solutions as enabler of greener applications – ALL2GaN, HORIZON-KDT-JU-2022-1-IA, 2023 – 26; PI: M. Kolíbal, CEITEC BUT, 309 380 EUR

Faculty of Mechanical Engineering has top position among mechanical engineering faculties in the Czech Republic as to the amount of received support from contract research. We have a long-standing cooperation with Škoda Auto (total income about 1.5 mil. EUR in the evaluating period) in the field of passenger vehicle thermomanagement, ICE design and vehicle testing. The project involves PhD students working in the Škoda Auto programme as well as at excellent foreign institutions such as AUDI, VW and Porsche. There are other strategic partners in the field of contract research, such as JTEKT Bearings Czech Republic, Continental Barum, Garrett Motion Czech Republic etc.

²² For the definition of contract research for the purposes of evaluation in the HE segments, see Article 2.2.1 of the Community Framework for State Aid for Research, Development and Innovation 2014/C 198/01.

²³ Regardless of whether the projects are completed or still ongoing, provided that at least part of the project was implemented during the evaluation period.

²⁴ The evaluated unit shall only fill tables that are relevant to it.

Mechanical Engineering of Biological and Bio-inspired Systems MEBioSys

Funding source: Ministry of Education, Youth and Sports, Johannes Amos Comenius Programme, specific call Excellent Research

Years of realization: 2023-2028

Project coordinator: Faculty of Mechanical Engineering, Brno University of Technology

Number of beneficiaries: 5

Total budget: 19.22 mil EUR

Budget intended for the EvU: 7.16 mil EUR

The project aims to strengthen international collaboration, enhance team development, and implement cutting-edge research. It involves fostering internationalisation through collaboration with foreign institutes, promoting mobility, upgrading technical equipment, and deepening integration among the involved institutions. This will lead to publications and tangible technical outcomes, including several patents. Implementation of top-level research utilizing the convergence of biological and technological evolution is divided into two research objectives. Objective A – Bioinspired Mechatronic Systems with topics: Development of materials based on theoretical approaches and bioinspiration; Superlubricity of mechanical components inspired by biosystems and Development of SMART material structures and bioinspired metamaterial systems. Objective B – Mechatronic Systems for Biomedical Engineering with topics: Hybrid and composite biomaterials; Surface modification and nanostructuring of biomaterials and Mechatronic systems for biomedicine.

The contribution to the mission and purpose of the FME BUT: The development of a new generation of groundbreaking engineering products from the convergence of biological and technological evolution through the international cooperation and research internationalization.

National Competence Centre of Mechatronics and Smart Technologies for Mechanical Engineering MESTEC

Funding source: Technology Agency of the Czech Republic, National Centres of Competence: Support programme for applied research, experimental development and Innovation

Years of realization: 2019-2022 (MESTEC), 2023-2028 (MESTEC2)

Project coordinator: Faculty of Mechanical Engineering, Brno University of Technology

Number of beneficiaries: 24 (MESTEC), 40 (MESTEC2)

Total budget: 8.3 mil EUR (MESTEC), 16.5 mil EUR (MESTEC2)

Budget intended for the EvU: 0.33 mil EUR (MESTEC), 1.23 mil EUR (MESTEC2)

National Competence Centre enhances cooperation between research organisation departments and business development capacities, fostering technological competence in smart components and technologies. R&D results lead to innovative smart components and systems for use in various technical areas, especially in industrial plants, machinery, processing industries, logistics, and the power industry. The centre partners in developing new machinery and system design concepts and explores applications in non-industrial fields, such as medical diagnostics and implants. Research focus of NCC has been conceived so that the Centre combines multidisciplinary research specialisations. In 2019–2022 these specialisations target three mutually related technological areas which prioritize machinery production for 21st century. The project involved 5 research institutes and 18 companies. 121 results were generated. NCC MESTEC2 is a development project of the established NCC and in 2023–2028 develops competences in 6 research programmes (1. Advanced Materials, 2. Surface Engineering and Tribology, 3. Transport Phenomena and Energy, 4. Additive Technologies, 5. Mechatronic Systems, 6. Energy-saving technologies and materials for sustainable development). The project includes 5 research institutes and 25 companies.

The contribution to the mission and purpose of the FME BUT: The enhancement of the applied research capabilities in the field of smart components and technologies to strengthen technology transfer and products commercialization with potential setting up start-up and spin-off companies. The development of the problem-based learning and project-oriented education.

National Competence Centre for Aeronautics and Space

Funding source: Technology Agency of the Czech Republic

Years of realization: 2023–2028

Project coordinator: Faculty of Mechanical Engineering, Brno University of Technology

Number of beneficiaries: 17

Total budget: 21.46 mil EUR

Budget intended for the EvU: 3.94 mil EUR

The project is focused on developing cooperation between the academic and private sectors and commercializing the results of joint research for the needs of society in the aerospace sector in the period 2023-2028. The project involves 5 research organizations and 12 industrial partners. BUT, as the project leader, coordinates research activities and, within the framework of sub-projects, addresses the strategic research agenda and manages research and commercialization activities. The space part addresses the issues of Control and communication of small satellites, Processors resistant to cosmic radiation, use of LIDAR and hyperspectral cameras in space technology, etc. Within its own research activities BUT addresses the development and issues of electromechanical actuators cooperating with autopilots, ballistic rescue systems for entire aircraft, fatigue life of aircraft aggregates, development of fatigue damage and issues of stratospheric devices. In the space field, the issues of communication with satellites and their control into orbit are developed.

The contribution to the mission and purpose of the FME BUT: The enhancement of the applied research capabilities in the field of Aeronautics and Space to strengthen technology transfer and products commercialization with potential setting up start-up and spin-off companies. The development of the problem-based learning and project-oriented education.

Božek Vehicle Engineering National Center of Competence

Funding source: Technology Agency of the Czech Republic

Years of realization: 2023–2028

Project coordinator: Czech Technical University in Prague

Number of beneficiaries: 30

Total budget: 24.16 mil EUR

Budget intended for the EvU: 2.3 mil EUR

The research and development of vehicles and components in the automotive and rail vehicle industry focus on both environmental friendliness and competitiveness, aiming to create purpose-optimized vehicles for surface transport. This is achieved through the electrification of vehicles and their components, as well as the digitization of research and products across thermodynamic, aerodynamic, mechanical, electrical, and control domains. These Key Enabling Technologies are integrated with testing processes and IT tools for vehicle control, which are linked to mobility systems, autonomous driving, and the overall environmental impact of vehicles throughout their life cycle. The Faculty of Mechanical Engineering contributes significantly to this project, particularly in the reduction of noise and vibrations in modern transportation systems, in collaboration with companies such as Zetor and Tatra Trucks. Another key area is improving the efficiency of turbomachinery as part of modern propulsion units in partnership with Garret Motion and PBS Turbo. Furthermore, the faculty is actively engaged in addressing crew comfort issues in passenger vehicles in cooperation with Škoda Auto.

The contribution to the mission and purpose of the FME BUT: The enhancement of the applied research capabilities in the field of Automotive to strengthen technology transfer and products commercialization with potential setting up start-up and spin-off companies. The development of the problem-based learning and project-oriented education.

Sustainable Process Integration Laboratory (SPIL)

Funding source: The Ministry of Education, Youth, and Sports of the Czech Republic

European Research Development Fund

Years of realization: 2016–2022

Project coordinator: Faculty of Mechanical Engineering, Brno University of Technology

Number of beneficiaries: 1

Total budget: 4.95 mil EUR

Budget intended for the EvU: 4.95 mil EUR

The project aimed to establish the Sustainable Process Integration Laboratory at the Faculty of Mechanical Engineering (FME), Brno University of Technology (BUT).

The Laboratory has a high application and publication potential. The project helped to establish an excellent international research team, supervised by a distinguished scientist. The project objective was to present unique (and simultaneously practical) knowledge which promotes increase in efficiency of process and power industries – in other words knowledge that helps to minimize the greenhouse, nitrogen, energy, and water footprints. Thanks to this project, research team with strong international cooperation was established. In 2021, SPIL team has participated in 151 journal and proceedings publications, collaborating with more than 87 institutions of 36 countries around the world. Among which are 93 IF papers published in top journals covering 12 research objectives.

The contribution to the mission and purpose of the FME BUT: The significant contribution to the global sustainability issues through the wide international cooperation. The involvement of PhD students from other countries into project solution.

Centre of environmental research: Waste management, circular economy and environmental security (CEVOOH)

Funding source: Technology Agency of the Czech Republic

Years of realization: 2021–2026

Project coordinator: CENIA – Czech Environmental Information Agency

Number of beneficiaries: 8

Total budget: 9.99 mil EUR

Budget intended for the EvU: 1.35 mil EUR

The aim of the project is to build a long-term, professional, and interdisciplinary research base consisting of key research organizations with an expertise and professional capacity for conducting research in the field of waste and circular management in a broader context. The Centre will provide the Ministry of the Environment, other ministries, professional platforms, and other entities with research results, dissemination of scientific knowledge, and expert support in the creation of policies, strategies, and regulations. The main thematic areas on which the Centre will focus in its activities are waste and circular management, monitoring and development of new monitoring tools to monitor the transition to a circular economy, including the development of new indicators, product life cycle analysis, eco-design, environmental contamination in terms of technologies, emerging pollutants, the use of new methods and approaches to identify and eliminate pollution, e.g. through remote sensing. An indispensable topic is also the area of environmental safety, prevention of serious accidents, and related topics of cyber safety and social acceptability of environmentally and technologically

conditioned conditions. Researchers from FME BUT are responsible for two Work Packages - 1.A Construction and Demolition Waste and 1.F National Circular Economy Monitoring. The contribution to the mission and purpose of the FME BUT: The focus on the waste management and circular economy to minimize impact on the environment. The raising awareness of these issues in education.

Computer Simulations for Effective Low-Emission Energy Engineering

Funding source: The Ministry of Education, Youth, and Sports of the Czech Republic, Operational Programme Science, Research and Education (funded by the European Union)

Years of realization: 2018–2022

Project coordinator: Faculty of Mechanical Engineering, Brno University of Technology,

Number of beneficiaries: 2 (other 3 partners participated on their own finding)

Total budget: 2.76 mil EUR

Budget intended for the EvU: 2.48 mil EUR

The objective was to promote long-term cooperation between NETME Centre at the FME, BUT – a research organization, industry partners, and municipal services. Subject-matter of the project and the cooperation was to develop simulation models and methodological procedures for application of computational models in various areas of power industry. The development of computational simulations within the project is oriented towards the power industry. The issues addressed within the project are characterized by an intensive interdisciplinary approach. Through industry partners, the use of advanced computational simulations was aimed at increasing the added value of commercialized components and technologies. A strong point of the project was the connection between the expert teams of the Brno University of Technology research organisation, industrial partners and the municipal sector (Teplárny Brno). Through intensified cooperation between the academic and application sectors, new cutting-edge knowledge applicable in industrial practice was achieved and knowledge competences in the use of computational simulations for solving a wide range of problems in the energy sector were expanded.

The contribution to the mission and purpose of the FME BUT: The significant contribution to the global sustainability issues through the effective low-emission energy engineering. The raising awareness of these issues in education.

Building twinning Actions in smart Aviation with eNvironmental Gains (BAANG).

Funding source: Horizon Europe, grant agreement no. 101079091

Years of realization: 2022–2025

Project coordinator: Faculty of Mechanical Engineering, Brno University of Technology

Number of beneficiaries: 4 (Brno University of Technology, TU Delft, Imperial College London and TU WIEN)

Total budget: 1.28 mil EUR

Budget intended for the EvU: 0.72 mil EUR

The main objective of BAANG is to stimulate the scientific excellence and innovation capacity of the involved partners in the field of smart aviation with a positive impact on the environment. Through a broad portfolio of twinning activities, it brings scientific and technological innovation leading to the design of an aircraft structure changing its morphology. Current aircraft have limited ability to adapt the wings aerodynamic shape to adapt to critical flight conditions. That restricts the possibilities of minimizing the aircrafts drag according to the actual wing load or suppressing adverse aeroelastic effects such as gust loading. The new wing design uses 3D printed metamaterials and advanced simulation techniques leading to efficient wing adaptation. The successful introduction of shape

changing, self-actuating structures in aviation aims to reduce fuel consumption and CO₂ emissions, reduce material waste in manufacturing, save significant maintenance costs and improve structural health monitoring. The main objective will be achieved by creating a network of collaborating academics from three leading research institutions - TU Delft, ICL and TU Wien, with the widening BUT institutions and industry representatives.

The contribution to the mission and purpose of the FME BUT: The international cooperation in the development of a new generation of aircraft wing to decrease the ecological footprint of air transportation.

Miniaturized Heat Switch Design Evolution

Funding source: European Space Agency (ESA)

Years of realization: 2020-2022

Project coordinator: Faculty of Mechanical Engineering, Brno University of Technology

Number of beneficiaries: 1

Total budget: 0.175 mil EUR

Budget intended for the EvU: 0.175 mil EUR

Miniaturized Heat Switch - a technology for probes and satellites, is designed for cooling power elements on space bodies. It is a project funded by the European Space Agency ESA launched in March 2020. The aim is to develop advanced technology and verify its functionality through a series of qualification tests in the simulated environment of Mars and the Moon. The uniqueness of the project solution lies in the "PRIME contractor" mode, i.e. FME BUT is the primary supplier of technology to ESA. Many challenges had to be solved. Among the others, thermal contact resistance (TCR) caused by surface imperfections results in a reduced heat transfer rate on the interface of two solids in contact. The exact prediction of these resistances may enhance the accuracy of the thermal conductance measurements in a thermo-vacuum chamber. The results quantify the effect of low contact pressure TCR within the experiments and provide insights into the design of heat transfer interfaces. This knowledge may be also applied in heat switch technology that relies on efficient heat transfer.

The contribution to the mission and purpose of the FME BUT: The enhancement of the applied research capabilities in the field of Space applications to strengthen technology transfer and products commercialization.

Plasmon Enhanced Terahertz Electron Paramagnetic Resonance – PETER

Funding source: EU H2020 Excellent Science – FET

Years of realization: 2018-2021

Project coordinator: Brno University of Technology (FME & CEITEC BUT), T. Šikola

Number of beneficiaries: 4

Total budget: 2.899 mil EUR

Budget intended for the EvU: 0.688 mil EUR

We proposed to establish Plasmon-enhanced Terahertz Electron Paramagnetic Resonance spectroscopy and scanning microscopy as a unique Electron Paramagnetic Resonance (EPR) platform for high-sensitivity local analysis of paramagnetic organic and inorganic species and materials. This project is solved in close cooperation between researchers from CEITEC BUT and Institute of Physical Engineering FME BUT. Researchers from Brno University of Technology, within the framework of European cooperation, have developed a method that will push the boundaries of research in the field of electron paramagnetic resonance (so-called EPR). The increased sensitivity of the new method could, for example, allow detailed diagnosis of tumor cells or investigation of battery behaviour and

degradation. This will make it possible to map the sample over its area and so to localize its properties with unprecedented resolution (below 1 micrometre). Such a significant enhancement of the EPR performance will open new ways in magnetic sensing technologies enabling for instance to study in situ functional centres in a wide variety of materials, and, generally, set a new direction in the development of the EPR-employing industry.

The contribution to the mission and purpose of the FME BUT: The international cooperation in the development of an advanced device combining strong research competences with commercialization potential of the developed product.

Table 3.3.1 Projects supported by public funds

In the role of beneficiary						
Provider ²⁵		Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
CSFS - Czech Science Foundation		18 943/ 747 258	23 317/ 919 803	19 506/ 769 467	27 466/ 1 083 471	25 174/ 993 057
TA CR - Technology Agency of Czech Republic		62 638/ 2 470 927	63 475/ 2 503 945	34 790/ 1 372 387	24 160/ 953 057	47 129/ 1 859 132
MD CR - Ministry of Defence		4 550/ 179 487	-	-	-	-
MIT CR - Ministry of Industry and Trade		-	-	996/ 39 290	1 016/ 40 079	-
MEYS - The Ministry of Education, Youth and Sports		68 098/ 2 686 312	58 075/ 2 290 927	60 718/ 2 395 187	38 764/ 1 529 152	5 940/ 234 320
EU		-	-	-	195/ 7 692	4 821/ 190 178
Total in K CZK		154 229	144 866	116 011	91 602	83 065
Total in EUR		6 083 974	5 714 652	4 576 360	3 613 474	3 276 732
In the role of another participant						
Provider ²⁷	Project name	Support (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
CSF - Czech Science Foundation		7 430/ 293 097	3 928/ 154 951	6 393/ 252 189	11 419/ 450 454	12 528/ 494 201
TA CR - Technology Agency of Czech Republic		54 041/ 2 121 795	82 885/ 3 269 625	94 295/ 3 719 724	90 080/ 3 553 452	129 014/ 5 089 310
MIT CR - Ministry of Industry and Trade		27 838/ 1 098 146	26 684/ 1 052 623	33 881/ 1 336 529	51 246/ 2 024 538	22 473/ 886 509
MH CR - Ministry of Health		-	-	-	-	756/ 29 822

²⁵ If the provider is from abroad, please indicate the provider's country of origin in brackets. For the determination of the country of origin of the provider, the place of residence of the provider is decisive.

²⁶ Indicate the total amount expressed in thousands of CZK and the conversion of the total amount into Euro.

²⁷ Ibid.

MA CR - The Ministry of Agriculture		586/ 23 116	707/ 27 890	718/ 28 323	1 715/ 67 653	1 308/ 51 598
MEYS - The Ministry of Education, Youth and Sports		25 513/ 1 006 430	16 693/ 658 501	17 824/ 703 116	16 079/ 634 280	3 014/ 118 895
EU		4 197/ 165 562	1 359/ 53 609	2 854/ 112 584	5 560/ 219 329	9 495/ 374 556
EU & MRD CR - Ministry of Regional Development		1 230/ 48 521	4 348/ 171 519	1 612/ 63 590	3 709/ 146 312	-
other international		1 936/ 76 371	2 051/ 80 907	1 305/ 51 479	-	-
Total in K CZK		122 771	138 656	158 882	179 809	178 588
Total in EUR		4 843 037	5 469 665	6 267 536	7 093 057	7 044 892

Table 3.3.2 - Contract research activities

Client ²⁸	VAT	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
ŠKODA AUTO a.s.	CZ00177041	9 416/ 371440	5 933/ 234043	6 941/ 273807	7 475/ 294872	9 840/ 388166
JTEKT Bearings Czech Republic s.r.o.	CZ26418495	2 018/ 79606	1 590/ 62722	1 919/ 75700	1 672/ 65957	2 026/ 79921
DANIELI & C. OFFICINE MECCANICHE SPA	IT00167460302	644/ 25404	3 431/ 135345	396/ 15621	635/ 25049	1 247/ 49191
AMAG Rolling GmbH	ATU37043203	766/ 30217	2 633/ 103866	762/ 30059	0	2 259/ 89112
GE Aviation Czech s.r.o.	CZ27928845	7 679/ 302919	8 904/ 351243	5 042/ 198895	946/ 37318	0
Continental Barum s.r.o.	CZ699000347	1 039/ 40986	1 442/ 56884	1 035/ 40828	2 101/ 82880	2 480/ 97830
Garrett Motion Czech Republic s.r.o.	CZ06610005	424/ 16726	409/ 16134	315/ 12426	1 979/ 78067	319/ 12584
ČEZ, a. s.	CZ45274649	0	52/2051	0	2130/84024	1690/66667
POSCO		1 363/ 53767	2 049/ 80828	480/ 18935	1 044/ 41183	447/ 17633
ITW PRONOVIA, s.r.o.	CZ46965823	1 012/ 39921	746/ 29428	1 499/ 59132	695/ 27416	1 410/ 55621
TŘINECKÉ ŽELEZÁRNY, a. s.	CZ699002812	830/ 32742	441/ 17396	3 196/ 126075	1 580/ 62327	1 249/ 49270
POSCO E&C Co., Ltd.		0	0	0	0	2000/78895
Inpraise systems s.r.o.	CZ06541747	0	0	210/ 8284	2 100/ 82840	1 393/ 54951
Fosfa a.s.	CZ00152901	624/24615	95/2748	0	40/1578	1200/47337
K.K.IRISU		0	0	0	7 790/ 307298	0
Hyundai NGV		2 385/ 94083	0	0	0	0
Technische Universität München	DE811193231	209/ 8245	134/ 5286	949/ 37436	41/ 1617	278/ 10966
MSR Engines s.r.o.	CZ26968215	0	0	2073/81755	0	12/473
PBS Turbo s.r.o.	CZ25321234	203/ 8008	213/ 8402	564/ 22249	262/ 10335	540/ 21302
Heat Transfer Systems s.r.o.	CZ25726242	8 401/ 331400	391/ 15424	297 11716	69/ 2722	212/ 8363

²⁸ If the client is from abroad, indicate in brackets the country of origin of the client.

Slovácké strojírny, akciová společnost	CZ00008702	9 936/ 391953	0	0	0	270/10651
Fives Stein	FR01383829934	145/5720	1465/57791	0	388/15306	945/37278
3D Objecto s.r.o.	CZ06699936	0	0	500/ 19724	0	0
4Jtech s.r.o.	CZ04628527	0	0	0	0	100/3945
Activair s.r.o.	CZ28605837	0	0	0	0	490/19329
ADAMOV - SYSTEMS, a.s.	CZ46995919	160/6312	0	0	0	0
Ademco CZ s.r.o.	CZ06609805	100/3945	0	0	0	469/18501
ADOZ, s.r.o.	CZ46345876	0	0	31/1223	58/2288	0
AERO Vodochody AEROSPACE a.s.	CZ24194204	0	1971/ 77751	585/ 23077	0	0
AeroMobil R&D, s. r.o.	SK2120045851	324/12781	73/2880	0	0	0
AeroMobil, s.r.o.	SK2023082149	0	0	192/7574	192/7574	0
Aircraft Industries,a.s.	CZ27174841	0	613/ 24171	500/ 19724	0	460/ 18146
ALFA RACING s.r.o.	CZ26829134	0	0	75/2959	0	0
ALFEKO s.r.o.	CZ26898241	340/13412	0	0	0	0
ALL-RACING s.r.o.,	CZ04579992	0	0	0	0	170/6706
AMAG Casting GmbH	ATU37042106	308/12150	0	0	0	0
Aquaponické systémy s.r.o	CZ05774314	0	0	350/13807	0	0
AQUATIS a.s.	CZ46347526	70/ 2761	0	0	0	0
AR Brno, spol. s r.o.	CZ25317903	0	0	0	180/7101	0
ArcelorMittal Basque Country Research Center	ESV95564258	403/ 15897	0	0	0	0
ArcelorMittal USA LLC		637/25128	234/9231	0	0	207/8166
Archeologický ústav AV ČR, Praha, v.v.i.	CZ67985912	118/4655	0	0	0	0
ASIO TECH, spol. s r.o.	CZ48910848	0	0	480/18935	0	0
ATRIMA spol. s.r.o.	CZ26968096	0	0	0	75/2959	0
AVATAR-SERVIS s.r.o.	CZ03613411	397/15661	0	0	0	0
Azu design s.r.o.	CZ26898764	0	0	0	356/14043	0
AZUB bike s.r.o.	CZ01661116	0	0	0	0	192/7574
AŽD Praha s.r.o.	CZ48029483	0	87/2432	0	0	0
BAUMÜLLER BRNO,s.r.o.	CZ49711121	30/1183	0	0	140/5523	15/592
Baumüller Nürnberg GmbH	DE133506024	0	0	0	123/4852	0
BD SENSORS s.r.o.	CZ49968416	44/1736	21/828	0	0	128/5049
Bellmer Czech s.r.o.	CZ08676283	0	0	0	1060/41815	0
Best - Business a.s.	CZ25573322	0	53/2091	0	0	0
Beta Control s.r.o.	CZ60696052	0	0	0	0	1300/51282
BIOMAC INDUSTRY s.r.o.	CZ05752574	0	290/11440	420/16568	0	0
BIOMASS ENERGY k.s.	CZ25567489	148/5838	0	0	0	0
BIOSTER, a.s.	CZ49970623	198/7811	0	0	0	0
BIS EUROMONT a.s.	CZ63147165	0	0	0	193/7613	0
BMT Medical Technology s.r.o.	CZ46346996	0	0	0	0	52/2051
BORCAD cz s.r.o.	CZ25855042	0	0	0	56/2209	0
Brněnské vodárny a kanalizace, a.s.	CZ46347275	0	0	140/5523	140/5523	0
C.S.O., spol. s.r.o.	CZ46973125	0	0	1990/78501	62/2446	0
cadvision, spol. s r.o.	CZ05027586	0	0	0	0	410/16174
CECHO - BOHUMIL CEMPÍREK s.r.o.	CZ27680703	0	0	0	0	215/8481

CemeCon s.r.o.	CZ27710254	0	0	8/316	92/3629	0
C-Energy Planá s.r.o.	CZ25106481	270/10651	0	0	290/11440	27/1065
Centrum apl. výzkumu	CZ06619070	0	100/3945	0	0	0
Centrum výzkumu Řež	CZ26722445	0	0	0	84/3314	290/11440
Continental Automotive Czech Republic s.r.o.	CZ62024922	520/20513	0	600/23669	0	0
Contipro, a.s.	CZ60917431	101/3984	0	0	0	0
CS5 Engineering s.r.o.	CZ08012334	0	0	0	500/19724	0
CTZ s.r.o.	CZ63472163	0	633/24970	59/2327	0	0
CZ LOKO, a.s.	CZ61672131	760/29980	494/19487	190/7495	304/11992	76/2998
Č.O.B. slévárna s. r. o.	CZ26825350	0	50/1972	470/18540	0	0
Čepro, a. s.	CZ60193531	0	0	95/3748	0	145/5720
České vysoké učení technické v Praze	CZ68407700	11/434	0	56/2209	0	0
Český telekomunikační úřad	CZ70106975	149/5878	0	0	0	0
ČKD Blansko Holding, a.s.	CZ27704271	88/3471	0	0	0	0
ČZ a.s.	CZ25181432	132/5207	0	0	0	0
Daido Metal Co., Ltd. -	CZ02414007	0	3250/ 128205	0	61/2406	0
Dalmine Investment s.r.o.	CZ04480414	0	0	472/18619	0	0
Damir Čaušević	CZ8006232542	0	0	395/15582	0	500/19724
DATRON - TECHNOLOGY CZ s.r.o	CZ03035751	139/5483	0	0	0	0
DEKONTA, a.s.	CZ25006096	0	192/7574	526/20750	87/3432	0
DEZA, a.s.	CZ00011835	92/3629	0	0	0	0
DI industrial spol. s r.o.	CZ60710268	399/15740	0	0	0	0
DIEFFENBACHER - CZ, hydraulické lisý, s.r.o.	CZ45475067	80/3156	0	0	134/5286	0
DIMA s.r.l.	IT01537310367	0	0	0	0	203/8008
Doosan Škoda Power	CZ49193864	65/2564	0	0	0	0
Dopravní podnik města Brna, a.s.	CZ25508881	127/ 5010	60/ 2367	38/ 1499	31/ 1223	50/ 1972
Dormer Pramet s.r.o.	CZ25782983	0	0	250/9862	250/9862	332/13097
DOSTAV Praha a.s.	CZ45274550	60/2367	0	0	0	0
DPOV, a.s.	CZ27786331	0	0	0	260/10256	75/2959
DVANÁCTKA s.r.o.	CZ29234794	0	0	0	0	90/3550
Edwards, s.r.o.	CZ26461498	44/1736	0	22/868	0	278/10966
EKOL, spol.s.r.o.	CZ699001388	0	0	75/2959	0	0
ENEOS Corporation Lubricants R&D Dept.		0	0	255/10059	245/9665	244/9625
ENERGOCHEM a.s.		68/2682	0	0	0	0
ENVITES, spol. s r.o.	CZ13690035	0	80/3156	30/1183	0	0
Ernst & Young, s.r.o.	CZ26705338	0	450/17751	0	0	0
Eurion, s.r.o	CZ27740391	0	0	0	480/18935	0
EUROPEAN SPACE AGENCY (ESA)		0	0	1 655/ 65286	0	0
EVECO Brno, s.r.o.	CZ65276124	74/2919	330/13018	179/7061	57/2249	42/1657
FAIVELEY TRANSPORT CZECH a.s.	CZ25213423	238/9389	0	0	0	0
FANS Project Int. S.r.o.	CZ09565299	0	0	460/18146	0	0
FANS, a.s.	CZ25625381	0	0	100/3945	0	0
FAST, VUT	CZ00216305	0	114/4497	0	28/1105	0
FERMAT CZ s.r.o.	CZ26180367	0	0	0	300/11834	0
Festool s.r.o.	CZ00658251	150/5917	0	0	0	0
FIB Belgium s.a.	BE0402958982	0	104/4103	0	0	0

Flenexa plus s.r.o.	CZ24741621	0	0	199/ 7850	0	0
Flight Design general aviation GmbH	DE313800679	416/ 16410	0	0	0	0
Forschungsvereinigung Automobiltechnik e.V.	DE226546332	0	266/ 10493	449/ 17712	0	0
František Mikyška	CZ490924094	60/2367	0	0	0	0
Frentech Aerospace s.r.o.	CZ60700581	53/2091	0	1241/48955	311/12268	185/7298
FTE automotive Möve GmbH	DE811161811	0	0	0	0	138/5444
GasNet Služby s.r.o.	CZ27935311	0	140/5523	0	0	0
GEMOS CZ, spol. s.r.o.	CZ25065238	215/8481	0	0	0	0
Gold Office s.r.o.	CZ25386212	110/4339	0	0	0	0
HANA a.s.	CZ00564770	0	110/4339	0	0	0
Hanon Systems Autopal s.r.o.	CZ699001200	0	0	0	209/8245	0
Hanon Systems Autopal Services s.r.o.	CZ699001200	191/ 7535	100/ 3945	100/ 3945	12/ 473	817/ 32229
Heatex Czech Republic s.r.o.	CZ24732281	0	0	72/ 2840	95/ 3748	0
HESTEGO a.s.	CZ63475073	62/2446	0	0	0	0
Honeywell International s.r.o.	CZ27617793	0	319/ 12584	0	420/ 16568	180/ 7101
Honeywell, spol. s.r.o.	CZ18627757	368/14517	0	0	0	0
HUTIRA - VISION, s.r.o.	CZ29319501	0	0	593/23393	544/21460	0
HUTIRA s.r.o.	CZ25324870	0	0	0	0	607/23945
HYDROMA, spol. s r.o.	CZ49973606	0	0	0	0	100/3945
HYDROTECH s.r.o.	CZ48245852	70/2761	20/789	0	0	0
CHEMPEX - HTE, a.s.	CZ15547001	0	123/4852	54/2130	0	0
CHEVAK Cheb, a.s.	CZ49787977	0	0	141/5562	0	0
ICTsystem, a.s.	CZ26237792	77/3037	0	80/3156	0	0
IMI International s.r.o.	CZ25692089	0	185/7298	50/1972	77/3037	308/12150
INFLATECH s.r.o.	CZ03052419	150/5917	0	0	0	0
Ing. David Ventruba	CZ8005234820	120/4734	0	0	0	0
Ing. Pavel Podešva	CZ6206220119	0	0	0	0	70/2761
Innomotics, s.r.o.	CZ26230755	22/868	46/1815	0	0	543/21420
IROMEZ s.r.o.	CZ24707341	0	0	0	325/12821	201/7929
ISAN Radiátory s.r.o.	CZ25334727	47/1854	0	30/1183	28/1105	84/3314
Jacobs Clean Energy s.r.o.	CZ26211564	0	0	0	303/11953	343/13531
Jihočeský vědecko-technický park, a.s.	CZ28080581	0	0	0	150/ 5917	0
Jihočeský vodárenský svaz	CZ49021117	0	0	0	0	64/ 2525
Jozef Ferencz FRT	SK1020643008	0	0	0	63/2485	0
JV Sport Racing Team s.r.o	CZ27789365	0	0	298/ 11755	242/ 9546	0
K&W Energy Solution s.r.o	CZ09359281	0	0	0	195/ 7692	150/5917
KAMA TECH spol. s.r.o.	CZ03829481	70/2761	0	0	0	0
KDYNIMUM a.s.	CZ45357293	0	12/473	0	0	148/5838
Kendrion (Prostějov) s.r.o.	CZ25552619	0	157/ 6193	490/ 19329	0	0
KGF HYDRAULIKA s.r.o.	CZ25575589	70/2761	0	0	0	0
KINEX BEARINGS, a.s.	SK2022083382	80/3156	75/2959	94/3708	0	0
Kingspan a.s.	CZ64829201	0	55/2170	152/5996	362/14280	169/6667
KOMA - Industry s.r.o.	CZ64617912	0	0	0	0	371/14635

KOVOLIT, a.s.	CZ00010235	0	0	0	248/9783	0
Kovoprojekta Brno a.s.	CZ46347011	150/5917	0	0	0	0
KOVOSVIT MAS Machine Tools, a.s.	CZ07333536	156/6154	0	0	0	0
Kovymont, s.r.o.	SK2023383351	0	0	0	0	279/11006
KR - TOOLS s.r.o.	CZ26923114	0	0	0	297/11716	491/19369
KRÁLOVOPOLSKÁ STRESS ANALYSIS GROUP s.r.o.	CZ26259681	0	0	0	240/9467	0
KSK Precise Motion, a.s.	CZ24782947	0	220/8679	179/7061	0	32/1262
Kubíček Factory s.r.o.	CZ41603869	0	0	165/6509	131/5168	175/6903
KUNST spol. s.r.o.	CZ19010591	170/6706	0	0	0	0
L.K. Engineering, s.r.o.	CZ26244560	0	0	21/828	45/1775	1630/64300
LANIK s.r.o.	CZ28470991	285/11243	0	0	0	0
Lechler GmbH	DE147325826	239/9428	372/14675	0	416/16410	0
Lesprojekt východní Čechy, s.r.o.	CZ25251431	0	0	500/19724	0	500/19724
Liberty Ostrava a.s.	CZ45193258	382/15069	94/3708	0	0	55/2170
Lilacpsta s.r.o.	CZ07225229	0	0	0	500/19724	0
LIMES Litomyšl s.r.o.	CZ15035140	0	0	0	0	217/8560
LUX spol. s.r.o.	CZ47452307	0	0	500/19724	0	0
Luxembourg Institute of Science and Technology	LU27327040	0	0	0	0	301/11874
M a V, spol. s.r.o.	CZ43964095	0	0	0	129/5089	0
MAMUT - THERM PRO s.r.o.	CZ27737209	0	0	0	495/19527	0
MARMOTIC s.r.o.	CZ06139884	30/1183	265/10454	364/14359	0	0
MarS a.s.	CZ48152366	0	0	120/4734	0	0
Masarykova univerzita	CZ00216224	200/7890	51/2012	75/2959	51/2012	5/197
Mattoni 1873 a.s.	CZ14706725	195/7692	0	0	0	0
MAUTING s.r.o.	CZ46979794	0	0	0	0	490/19329
Mave spol. s.r.o.	CZ00535630	0	0	0	395/15582	0
MAXAREN s.r.o.	CZ05150469	35/1381	0	0	70/2761	0
MB Pharma s.r.o.	CZ25687191	0	0	30/1183	0	50/1972
MCAE Systems, s.r.o.	CZ60755431	0	0	0	0	51/2012
Mejzlik Propellers s.r.o.	CZ26921901	0	360/14201	0	48/1893	12/473
Mendelova univerzita v Brně	CZ62156489	0	195/7692	0	0	42/1657
MICo servis, spol. s r.o.	CZ27676676	0	0	30/1183	88/3471	0
Micro-Swiss Ltd.		0	0	0	0	65/2564
MINEWORKS s.r.o.	CZ01419358	0	0	0	0	470/18540
Ministerstvo obrany	CZ60162694	0	0	0	0	331/13057
MMT s.r.o.	CZ25010719	0	0	490/19329	200/7890	0
MOLPIR GROUP CZ a.s.	CZ25828843	200/7890	0	0	0	0
Moog Brno s.r.o.	CZ24308480	16/631	140/5523	0	0	0
MOTORPAL, a.s.	CZ27622819	69/2722	29/1144	0	0	41
Mubea IT Spring Wire s.r.o.	CZ26954664	50/1972	0	0	0	0
NAFIGATE Corporation, a.s.	CZ24166855	0	500/19724	100/3945	0	0
NATURIA s.r.o.	CZ25946650	0	0	500/19724	0	0
NAVOS FARM TECHNIC s.r.o.	CZ63489911	0	32/1262	0	0	0
NETWORK GROUP, s.r.o.	CZ60750430	0	0	0	0	500/19724
New Era Solutions s.r.o.		94/3708	0	0	0	0
Nobilis Tilia s.r.o.	CZ25497006	0	0	0	0	250/9862
NovaTech Cz s.r.o.	CZ25591231	51/2012	37/1460	39/1538	18/710	69/2722

NUKLEON s.r.o.	CZ25330071	0	110/4339	0	0	0
Oblastní průmyslový podnik Polička a.s.	CZ45534594	70/2761	0	0	0	0
Olympus Medical Products Czech s.r.o.	CZ27812502	80/3156	0	0	0	72/2840
One3D s.r.o.	CZ03554538	0	0	58/2288	0	0
Orbital Machnies AS		0	0	0	386/15227	0
ORLEN UniCRE a.s.	CZ62243136	0	0	0	880/34714	0
ORLEN Unipetrol RPA s.r.o.	CZ699000139	60/ 2367	30/ 1183	30/ 1183	30/ 1173	67/ 2643
ORLIČAN s.r.o.	CZ03544974	0	0	240/9467	0	26/1026
OTIS a.s.	CZ42324254	0	0	0	0	227/8955
Pavel Homola	CZ7001291418	0	0	175/6903	250/9862	0
PBS POWER EQUIPMENT, s.r.o.	CZ27736814	74/ 2919	89/ 3511	0	40/ 1578	0
Pealock holding, s.r.o.	CZ07837208	0	0	0	70/2761	0
PKI - Teplotechna Brno, spol. s r.o.	CZ46905308	0	0	60/ 2367	168/ 6627	111/ 4379
PLATIT a.s.	CZ25904795	35/1381	0	50/1972	0	0
PONY AUZO trend s.r.o.	CZ25355988	0	0	0	250/9862	0
Poppe + Potthoff s.r.o.	CZ26902214	0	0	0	68/2682	0
PRAGA Cars s.r.o.	SK2022960335	0	0	0	0	70/2761
Pražské služby, a.s.	CZ60194120	0	0	141/5562	0	0
PRESSKAN systém a.s.	CZ60743824	0	0	0	358/14122	0
Primetals Technologies Austria GmbH	ATU69087212	0	93/ 3669	0	940/ 37081	0
Primetals Technologies Japan, Ltd.		0	179/ 7061	262/ 10335	0	0
PROFcomms s.r.o.	CZ47911263	0	0	0	500/19724	0
Prototypa-ZM, s.r.o.	CZ49453653	400/15779	0	0	0	0
Proventia Czech s.r.o.	CZ06972942	0	99/3905	25/986	0	0
První brněnská strojírna Velká Bíteš, a.s.	CZ00176109	153/ 6036	17/ 671	238/ 9389	519/ 20473	381/ 15030
První brněnská strojírna, a.s.	CZ00211281	0	0	0	0	80/ 3156
Qoolers s.r.o.	CZ06986951	0	0	0	0	66/2604
Rayo Engineering, s.r.o.	CZ28945280	220/8679	50/1972	40/1578	0	0
ReklamniTechnologie.cz s.r.o.	CZ02703629	0	0	0	0	380/14990
REMO CZ Tlumačov s.r.o.	CZ25344021	0	365/14398	0	0	0
RENY Trading spol. s.r.o.	CZ49454986	0	350/13807	0	0	0
RHK Energy Solutions s.r.o.	CZ09359281	0	0	0	0	1 196/ 47179
RM metal s.r.o.	CZ06109632	0	0	0	160/6312	0
Robert Bosch GmbH	DE811128135	0	0	0	361/14241	474/18698
Rtec Instruments		0	0	429/16923	73/2880	0
RUKO CZ Präzisions werkzeuge s.r.o.	CZ29310768	50/ 1972	50/ 1972	0	0	0
Řetězárna Česká Třebová s.r.o.	CZ27482839	16/ 631	0	0	50/ 1972	0
S.A.B. Aerospace s.r.o.	CZ02588862	0	0	0	0	1099/43353
SA AMORTISSEUR DONERRE	FR87398966069	348/13728	0	0	0	0
SA ESI GROUP	FR45381080225	0	0	0	458/18067	0
SAKO Brno a.s.	CZ60713470	88/3471	0	0	0	0

Salzgitter Flachstahl GmbH	DE813111970	0	0	316/ 12465	0	0
SARL KINTESYS	FR45445236995	969/38225	0	0	0	0
SAS ANDRITZ METALS FRANCE SAS	FR20443580162	0	0	0	597/ 23550	0
SATTELO s.r.o.	CZ03976947	203/8008	0	0	236/9310	40/1578
SBA mechatronics GmbH	ATU49410203	226/8915	0	0	0	0
Sellier & Bellot a.s.	CZ28982347	67/2643	0	0	0	0
SHARK.AERO s.r.o.	SK2022650729	0	420/16568	0	0	0
SHM, s. r. o.	CZ47976519	108/4260	102/4024	15/592	0	0
Schaeffler Production CZ s.r.o.	CZ25922092	0	0	0	1 000/ 39448	0
Schaeffler Skalica, s r.o	SK2020378448	0	738/29112	0	649/25602	0
Schaeffler Technologies AG&Co.KG	DE291636029	1 267/ 9862	0	0	0	0
SCHEM a.s.	CZ24279064	0	0	470/18540	0	0
Schlieger, s. r. o.	CZ28787803	250/9862	0	0	0	0
Siemens Mobility GmbH	DE316012188	0	0	0	0	2104/82998
Siemens s.r.o.	CZ00268577	195/7692	130/5128	90/3550	90/3550	90/3550
SIGMA DIZ spol. s r.o.	CZ26868521	187/7377	0	0	0	0
SIGMA GROUP a.s.	CZ60702001	556/21933	0	0	0	0
Sigma Motor s.r.o.	CZ05766711	0	398/15700	0	0	0
SIGMA Výzkumný a vývojový ústav, s.r.o.	CZ25355015	0	0	128/5049	70/2761	0
SKALA-Medica s.r.o.	CZ26694085	0	89/3511	0	0	0
SKO, spol. s.r.o.	CZ26817233	0	295/11637	0	0	0
SLAVÍK - Technické plasty s.r.o.	CZ26839890	0	0	0	465/18343	0
Slovenská technická univerzita v Bratislavě	SK2020845255	0	0	0	90/ 3550	0
SMART TECHNIK a.s.	CZ25577999	0	0	0	0	60/2367
Sobriety s.r.o.	CZ26271061	120/4734	0	0	0	0
Sokolovská uhelná, právní nástupce, a.s.	CZ699001005	0	0	0	0	666/ 26272
SOMA spol. s r.o.	CZ45536724	0	0	0	0	70/2761
Spraying Systems Austria GmbH	ATU53369108	0	200/ 7890	0	0	0
Spraying Systems Co.		214/8442	0	0	0	374/14753
SPUR a.s.	CZ46900098	0	100/3945	0	0	0
SSAB EMRA AB		0	0	154/6075	0	0
SSAB Iowa Inc.		0	0	0	0	178/7022
Státní ústav jaderné, chem. a boil. ochrany	CZ70565813	149/ 5878	174/ 6864	171/ 6746	115/ 4536	0
Statutární město Brno	CZ44992785	0	0	0	41/1617	0
Statutární město Opava	CZ00300535	0	0	78/3077	0	0
STEMME AG	DE813288804	476/18777	0	0	0	0
STI Development,s .r.o.	CZ28370180	0	80/3156	0	0	0
STROJÍRNA NOVOTNÝ s.r.o.	CZ26819678	0	400/ 15779	0	0	409/ 16134
STROJÍRNA OSLAVANY, spol. s r. o.	CZ49444531	0	285/ 11243	0	0	0
STV Technology, s.r.o.	CZ05031761	0	0	0	0	89/3511
SUNFLOWER-TRIMMER s.r.o.	CZ28244923	220/8679	0	0	0	0
Super2Stroke s.r.o.	CZ09257683	0	0	0	0	200/7890
SVS FEM s. r. o.	CZ15548180	0	179/7061	259/10217	59/2327	0

ŠKODA JS a.s.	CZ25235753	25/986	175/6903	0	0	0
Šternberské strojírný s.r.o	CZ46576169	0	0	0	490/19329	488/19250
TALOSA s.r.o.	CZ61946354	0	0	0	270/10651	0
TATRA TRUCKS a.s.	CZ01482840	120/4734	0	0	0	500/19724
TE Connectivity Czech s.r.o.	CZ48910791	0	0	62/2446	24/947	0
TEAZ s.r.o.	CZ26934213	183/7219	290/11440	0	265/10454	0
Tecpa s.r.o.	CZ27675173	93/3669	374/14753	0	0	0
Technická univerzita v Liberci	CZ46747885	0	0	81/3195	0	0
TechProAviation, s.r.o.	CZ47669802	0	0	430/16963	0	0
TEMPERATOR s.r.o.	CZ27881369	0	0	0	264/10414	0
TENZA, a.s.	CZ25570722	82/3235	0	0	0	0
TERMOSONDY Kladno, spol. s.r.o.	CZ46358447	0	285/11243	0	0	0
Thales Alenia Space italia S.P.A.	IT00991340969	0	0	1 321/52110	0	493/19448
Thermo Fisher Scientific Brno s.r.o.	CZ46971629	868/34241	560/22091	24/947	46/1815	46/1815
THK RHYTHM AUTOMOTIVE CZECH a.s.	CZ48244716	0	0	0	157/6193	0
THK RHYTHM AUTOMOTIVE GmbH	DE815568693	0	0	0	0	112/4418
TODOROV nástrojárna s.r.o.	CZ26106582	343/13531	0	0	0	312/12308
Tomsk Polytechnic University		0	94/3708	0	0	0
TOSHULIN, a.s.	CZ25510851	0	0	56/2209	0	0
TOTAL ČESKÁ REPUBLIKA s.r.o.	CZ41189671	0	150/5917	0	0	0
TRENDEX NOVA a.s.	CZ25832905	0	345/13609	237/9349	0	0
TRENS SK, a.s.	SK2023022980	0	0	0	0	146/5759
TRINOM s.r.o.	CZ19014015	260/10256	0	0	0	0
TRITREG - TRINEC, s.r.o.	CZ48390372	0	0	0	0	491/19369
UJP Trade s.r.o.	CZ04079752	198/7811	0	0	0	0
UNICOM servis, spol.s.r.o.	CZ18825290	33/1302	38/1499	0	0	0
UptimAI s.r.o.	CZ06806589	0	0	0	0	172/6785
Ústav aplikované mechaniky Brno, s.r.o.	CZ60715871	88/3471	55/2170	0	120/4734	900/35503
Ústav fyziky plazmatu AV ČR,v.v.i.	CZ61389021	0	0	35/1381	0	217/8560
VAN DER LEE TURBO SYSTEMS B.V.	NL854197096B01	0	0	0	727/28679	724/28560
VAŇURA s.r.o.	CZ63468239	0	0	400/15779	400/15779	0
VEIT Electronics,s.r.o.	CZ27661105	67/2643	198/7811	0	0	0
VIA ALTA a.s.	CZ26906741	0	289/11400	0	110/4339	0
ViskoTeepak, s.r.o.	CZ26156768	0	19/750	28/1105	0	170/6706
Vitesco Technologies Czech Republic s.r.o.	CZ07574622	0	52320631	693/27337	0	0
VÍTKOVICE HEAVY MACHINERY a.s.	CZ25877950	160/6312	0	0	0	0
Voith Turbo Power Transmission CZ s.r.o.	CZ63981106	0	957/37751	279/11006	131/5168	203/8008
Volkswagen AG	DE115235681	765/30178	0	0	0	0
Vysoká škola báňská - TU Ostrava	CZ61989100	33/1302	145/5720	91/3590	135/5325	0

Výzkumný a zkušební letecký ústav, a.s.	CZ00010669	0	0	0	352/ 13886	123/ 4852
WALBO ENGINEERING s.r.o.	CZ05130824	0	60/ 2367	0	60/ 2367	0
Wikov MGI a.s.	CZ26491826	0	0	0	0	79/3116
WOMBAT, s. r. o.	CZ47912553	180/7101	0	0	0	0
Z- MODEL, spol. s r.o.	CZ25539931	0	282/11124	0	0	0
Západočeská univerzita v Plzni	CZ49777513	0	0	0	0	190/7495
Zásobování teplem Vsetín, a.s.	CZ45192588	0	0	0	0	1694/66824
ZEBR s.r.o.	CZ26915308	0	0	0	0	489/19290
Zetor Engineering, s.r.o.	CZ28897641	0	0	0	0	413/16292
ZETOR TRACTORS a.s.	CZ26921782	92/3629	0	0	0	0
ZLIN AIRCRAFT a.s.	CZ27894134	25/986	0	0	0	0
ZLKL, s. r. o.	CZ47973943	80/3156	0	0	26/1026	0
ŽĎAS, a.s.	CZ46347160	350/13807	0	0	0	0
ŽP VVC s.r.o.	SK2022650894	15/592	396/15621	208/8205	0	0
Other contracts		964/ 38028	492/ 19408	486/ 19171	496/ 19566	454/ 17909
Total		70224/ 2770196	53663/ 2116871	51817/ 2044049	56287/ 2220413	63863/ 2519260

Note: List and describe contract research activities with a revenue in a given calendar year, regardless of the amount of financial revenue.

3.4 Research results with existing or prospective impact on society

The evaluated unit shall briefly comment on a maximum of 10 (considered most significant by the evaluated unit) research results already applied or realistically heading towards application during the period of 2019–2023, based on the overview annex table 3.4.1 (it is recommended to indicate results with a link to projects listed in indicator 3.3). The evaluated unit must demonstrate in its description that the research results have led or will soon lead to positive impacts²⁹, on society (e.g. description of how the results are used by various users, the range of persons/institutions for which the result is relevant, measurable economic impacts, etc.). The evaluated entity shall indicate in its commentary whether the gender dimension is considered in these results and discuss the impacts of the results regarding sustainability.

Maximum range 300 words/result.

Self-assessment: (Results presented do not discriminate against any gender or other physical limitations)

Output name: Device for water treatment and way of doing it using this device (CaviPlasma).

Type of output: Patent

Year of application: 2019

CaviPlasma is a device for the treatment of wastewater from micropollutants (drug residues, contraceptives, pesticides, organic substances). It works on the principle of synergy of hydrodynamic cavitation and low-temperature plasma discharge (a plasma discharge is ignited in the vapour cloud created by cavitation), the formation of stable hydrogen peroxide and UV radiation, which leads to the oxidation of organic substances. CaviPlasma is the first high-volume plasma technology for water treatment. CaviPlasma is an outcome of multidisciplinary research of Brno University of Technology, Masaryk University, and the Botanical Institute of the Czech Academy of Sciences, the original idea comes from Brno University of Technology (Pavel Rudolf, Ph.D.). CaviPlasma responds to the currently approved EU Urban Wastewater Directive legislation aimed at micropollutant removal and circular water management. The Czech, Israeli, and Canadian patents for CaviPlasma have been granted, European patent is pending, the US patent has been filed (56% share of Brno University of Technology in patent rights). Two licenses have been sold to Czech companies; further licensing is under negotiations. CaviPlasma won the 1st place in the Transfera Technology Day 2020 competition and the Gold Medal of the International Engineering Fair (2021). What makes CaviPlasma particularly impactful is its ability to address sustainability challenges head-on. By reducing micropollutants in wastewater, it helps safeguard aquatic ecosystems and human health, addressing both the immediate and long-term challenges posed by water contamination. *Project - Principles and mechanisms causing microorganism elimination by hydrodynamic cavitation - Czech Science Foundation*

Output name: Field Tribometer for Assessment of Adhesion on the Rail.

Type of output: Functional sample

Year of application: 2020

Experimental device for assessment of creep curve by application of controlled traction force in a rail section. The unique portable rail tribometer can record an entire creep curve on a rail in a single pass and measure extremely low traction coefficients (less than 0.02). The device is used to determine the properties of real friction layer on the rail especially during testing and deployment

²⁹ See Terms definition.

of the systems for friction management in the wheel-rail contact by application of friction modifiers and enhancers. This device's highly accurate and rapid measurement capabilities enable comprehensive assessment of creep curve parameters in laboratory and field environments. Its robustness significantly advances wheel-rail tribology research and the implementation of friction management techniques in real-world settings, contributing to improved safety and efficiency in railway operations. This device is going to be used by the Rail Authority established by Ministry of Transport of Czech Republic and that activities are governed by the applicable legislation (in particular the Railways Act and its implementing decrees). Its main mission is to maintain and improve the safety of the operation of individual railways and other guided transport systems. Its crucial role from a sustainability standpoint is in optimizing railway friction management systems. By providing highly accurate and rapid measurements of friction properties, it contributes directly to reducing wear and tear on rail and wheel surfaces, thereby extending the lifespan of infrastructure. *Project - Božek Vehicle Engineering National Center of Competence - Technology Agency of the Czech Republic.*

Popelka - a tool for managing collection infrastructure and creating waste collection plans. Waste collection planning represents a complex issue that evolves over time. Changes encompass the expansion of separately collected waste fractions, transitions to new collection systems, densification of collection networks, or the development of waste generation over time. As a result, these changes also impact the collection frequency, which is also influenced by the type of housing (single-family and apartment buildings) and, where applicable, the season (organic waste production). The computational tool Popelka is designed as a web application, eliminating the need for users to install any software. A regular PC is sufficient, as all calculations run on a powerful server. Currently, Popelka is divided into two computational modules. The first module focuses on defining the collection infrastructure in individual municipalities that are part of the inter-municipal collection plan. The application provides a user interface for planning municipal waste collection. It automatically generates an annual collection schedule for the entire fleet of waste collection vehicle. The application estimates collection costs and optimizes regular operations. The application is primarily used by technical services and waste collection companies that handle daily waste collection. One module is also devoted to municipalities, allowing them to properly size and place waste containers based on the production of a specific type of waste, required walking distance, and collection frequency. The tool also aims to support establishing and expanding municipal coalitions used not only for handling waste treatment. The utilization of Popelka tool brings several benefits. The most significant advantage is the optimization of collection plans and the associated reduction in costs for servicing collection points. By enabling more precise planning and improving waste sorting, Popelka helps optimize resource use and drive down the environmental footprint of waste collection operations.

Output name: Magnetorheological damper with short response time.

Type of output: EPO patent

Year of application: 2022

The short response time of the damper, the delay between the control signal and the force response, is ensured by the special design of the magnetic circuit of the damper piston, which includes grooves oriented perpendicular to the direction of the magnetic flux. The geometry,

dimensions and number of grooves were determined based on a number of transient magnetic simulations. The grooves in the magnetic circuit were produced by an electro-erosive machining of 0.3 mm width. The response time of this damper is about 10 ms, which is sufficient for effective semi-active control of the yaw movement. Presented MR damper achieves 1.1 kN (0.06 m/s) at zero electric current and 17.1 kN (0.06 m/s) at maximum damping current. The system's uniqueness lies in its ability to regulate at high frequencies, thereby improving vibration isolation and other properties of suspension systems. The most significant benefits are expected in rail transport and cycling, enhancing the quality and safety of transportation. This technology reduces wear on vehicles and infrastructure in rail transport, leading to extended service intervals. The development of this technology in collaboration with STOS s.r.o., a leader in this area, creates new job positions in development and production. The development of this product has led to the set up the start-up company Grixi s.r.o., focusing on applying this technology to e-bikes and electric motorbikes. This technology is expected to increase the comfort of rail transport, making it more attractive to the population. From the sustainability point of view, the increased usage of this ecological mode of transport will reduce the carbon footprint and improve quality of life. *Project - Development of Magnetorheological Damping System for Railway Vehicles - Ministry of Industry and Trade*

Output name: Software for route planning optimization.

Type of output: Software

Year of application: 2022

Algorithm for truck route planning including height and weight restrictions, special manoeuvres such as left turn at an uncontrolled intersection, weather effects, pass ability due to traffic density and immediate closures. The Contraction Hierarchies algorithm was used to optimize the search. Currently, logistics companies have to purchase map data for route planning and update it if changes occur. The most suitable route is selected based on the number of kilometres and the experience of the dispatcher. The software plans the optimal route not based on the number of kilometres travelled, as has been the case until now, but based on the total cost of transportation. The tracing software will benefit not only dispatchers, but also the start-up Wereldo.com, which commissioned the development from Brno mathematicians. The company will no longer have to buy new map data with every change, and thanks to the innovative software, it can offer its customers even better services. Subsequently, the algorithm was purchased by Wereldo.com s.r.o. as part of the Agreement on the Use of Results for 1 million CZK and is currently used for tracking various types of freight transport. Wereldo.com estimates that it will save up to 15% of costs. In particular, in the case of their main customer's (DHL) turnover (up to 2 billion CZK), the estimated savings will constitute approximately 300 million CZK. Negotiations are underway with representatives of the Transport Association of the Czech Republic regarding this potential algorithm application. Algorithm for truck route planning helps to contribute to sustainability issues by reducing the fuel consumption and pollution. *Project - Advanced tracing software for various types of trucks -Ministry of Industry and Trade.*

Output name: OpenTube2.

Type of output: Verified technology

Year of application: 2022

The automated solution for the initial handling with samples, such as COVID-19, developed by researchers from the Faculty of Mechanical Engineering of the Brno University of Technology (BUT) with the support of the team of the University Hospital of Brno. It is a complex robotic workstation for laboratory manipulation, specifically for the efficient handling of potentially infectious COVID-19 samples. The first version was developed in 2019, based on the use of the collaborative robot ABB IRB 14000, and was a comprehensive solution that included an information system for sample registration. The second version, called openTube2, was a professional solution designed for biohazard level 2 laboratories. The equipment was designed for a laminar biohazard box, based on SCARA robotics and SMC and B&R Automation. Its usability was general, i.e., for various samples with potential risk. The openTube2 system was successfully tested for several months in the rigorous environment of the biohazard laboratory at Brno University Hospital. Tuning of the handling protocol, the characteristics and parameterization of the robot with regard to the instrumentation and nature of the samples, the system calibration itself, laboratory protocols, as well as the understanding of the safety standards were carried out. The openTube2 system was nominated for a gold medal at the International Engineering Fair in Brno, where it was exhibited. The environmental sustainability of openTube2 is evident in its design and operational efficiency. Its robotic precision reduces waste and error, helping to optimize resource use in the lab, including consumables and equipment maintenance. *Project - OpenTube2: robotic workplace for sample handling COVID-19 - Ministry of Industry and Trade.*

Output name: Methodical guideline for using of Low-/Medium-Intensity lights on VFR RWY.

Type of output: Methodology approved

Year of application: 2021

The aim of the methodological guideline was to create a regulation for using Low-/Medium-Intensity lights on VFR RWY, with the fact that it is a document that complements the valid regulation L14 for the given area. When creating the document, it was necessary to combine the conflicting requirements for the simplicity of the system as a whole, affordability and at the same time maintain a sufficient level of safety. The resulting proposal is therefore a compromise between the above requirements. The approved certified methodology was issued as an official methodological guideline directly by the Civil Aviation Authority of the Czech Republic, which is part of the Ministry of Transport. Its use directly helps save human lives, increases safety and allows you to prevent air accidents. It has an impact on the protection of the lives of residents, property and the environment. Immediately after the creation of the methodology, the transfer of new knowledge into practice took place. The proposed methodology was first used when it was necessary to ensure lighting of the heliport of the hospital in Cheb during the evacuation of patients from the Karlovy Vary region due to the COVID19 virus. At that time, the Ministry of Transport and the Civil Aviation Authority of the Czech Republic required the use of the MoLiS prototype and its installation according to the aforementioned methodology, thus ensuring operation and ensuring the transport of patients, medical equipment and medicines! The main benefit of this methodology is therefore to ensure conditions for safe operation at airports that VFR night operations were previously unable to provide. From an environmental perspective, the methodology supports

energy-efficient lighting that reduces power consumption while enhancing safety, contributing to a greener aviation sector. As more airports adopt this standard, the cumulative reduction in energy usage and environmental footprint could have a significant long-term positive impact. *Project – MoLiS - Technology Agency of the Czech Republic.*

Output name: Prototype of a new knee implant to the patent application PV 2020-459.

Type of output: Prototype

Year of application: 2020

A new, original technology for replacing human or animal joints using custom-made implants, without unnecessary planar osteotomy, further characterized by a new design, application of modern EBM technology and new insertion technology. The new implant is characterized by a lower weight (up to 70%) compared to classic implants, the same or higher bending strength, fatigue resistance (up to 13 million cycles in the symmetrically alternating cycle mode at a stress level of 35% of the material's yield strength). The social relevance lies mainly in improving the quality of life, which fulfils the sustainable development goals, which are to be achieved by 2030, as adopted by the world community at the United Nations General Assembly. This is mainly about fulfilling the strategic goals that assume ensuring a healthy life and increasing its quality. The use of the implant can be applied to all age groups. The gender dimension of the result was considered during development and testing, when different somatic types (male and female) were taken into account. The overall trauma is lower. The solution can be expanded further into the world, it can lead to the construction of a clinic with this type of surgery and create new jobs for surgical and postoperative care. From a sustainability perspective, the implant's innovative design and materials contribute to a more sustainable healthcare system by reducing the need for frequent replacements and minimizing the environmental impact of medical waste. *Project - Research of promising production technologies – Ministry of Education, Youth and Sports.*

Output name: Waste management plan of the Czech Republic for the period 2025-2035.

Type of output: Report

Year of application: 2023

The Institute of Process Engineering at Brno University of Technology (IPE BUT) participated in the preparation of this strategic document as a subcontractor. The main contractor and contract partner to the Ministry of Environment was Ernst&Young, s.r.o. The IPE BUT was responsible for the part of the document analysing the current waste production and processing and the network of processing facilities of about 20 waste streams including municipal, hazardous, construction, and biodegradable waste. UPI BUT was also involved in the preparation of the design part. Unique computational tools, developed at the department, were used to prepare the document, which is more than 1000 pages in length. The Waste Management Plan of the Czech Republic sets out objectives, principles and measures for waste management in the Czech Republic in accordance with the principles of sustainable development and the circular economy. It is one of the principal materials issued by the Ministry that is why contributions made by researchers from the Faculty of Mechanical Engineering has strong impact on the society and helps to contribute to not only to the environmental issues but also the health of our population. In this way, the Waste Management Plan is an essential tool for achieving long-term environmental and economic sustainability. *Ministry of the Environment/Ernst&Young, s.r.o.*

Output name: Material analysis of the damaged tow rope “Ještěd”.

Type of output: Expert report

Year of application: 2022

This is an expert report related to the accident in which a cable car cabin collapsed on Ještěd on October 31, 2021. The conductor, who was alone in it, died. Another 14 people from another cabin were evacuated by firefighters. According to the manager of Czech Railways, the tow rope was destroyed. The expert activity consisted of analyzing the damage to the traction rope of the cable car for transporting people. Before the actual expertise, the hangers were checked with damaged and undamaged ropes and then the hanger was disassembled to release the ropes with end caps for the necessary analyses. The damaged rope and the undamaged rope were subsequently secured for expertise. Conclusions were drawn based on the analysis. This example represents a significant contribution of researchers from the Faculty of Mechanical Engineering to society even in such specific cases. This case was done under supervision of the Institute of Forensic Engineering of the Brno University of Technology. By investigating such specific incidents, researchers from the Faculty of Mechanical Engineering help to prevent future accidents, safeguard human lives, and enhance the sustainability of public transportation systems.

Table 3.4.1 - Overview of selected research results in the period under evaluation

Type of result ³⁰	Year of application	Name
Patent	2019	Device for water treatment and way of doing it using this device
Functional sample	2020	Field Tribometer for Assessment of Adhesion on the Rail
EPO patent	2022	Skeleton for magnetic core and method for manufacturing the same
Software	2022	Popelka - a tool for managing collection infrastructure and creating waste collection plans
Software	2023	Software for route planning optimization
Verified technology	2022	OpenTube2
Methodology approved	2021	Methodical guideline for using of Low-/Medium-Intensity lights on VFR RWY
Prototype	2020	Prototype of a new knee implant to the patent application PV 2020-459
Report	2023	Waste management plan of the Czech Republic for the period 2025-2035
Expert report	2022	Material analysis of the damaged tow rope “Ještěd”

Note 1: Please list and describe the results already applied in practice or heading towards application in practice with existing or prospective impact on the society (e.g. domestic or foreign patents, sold licenses, spin-offs, prototypes, varieties and breeds, methodologies, significant analyses, surveys, expert outputs for policymaking or other forms of non-publication outputs, etc.). Indirect results of research, development and creative activities with documented societal impact, e.g. expert activities, services to the public/government/scientific community, may also be reported.

³⁰ Specify the specific type of result. Add rows as needed.

TRANSFER OF RESULTS INTO PRACTICE

3.5 Transfer of results into practice

The evaluated unit shall briefly describe its system for transferring results into practice. It shall also indicate up to five of the most typical users of its results, whether in the university environment or in the non-university application/corporate sphere, detailing how it collaborates with them and how it seeks out new users (using a maximum of five specific examples).

It will also indicate whether and how it commercialises R&D&I results (e.g. selling licences, setting up start-up or spin-off companies, etc.)³¹, providing brief description of the commercialisation methods used. The effectiveness of the transfer of results and the commercialisation of R&D&I results will be described using a selection of results (max. five) listed in annex table (Table 3.4.1).³²

Additionally, the evaluated unit shall briefly comment on the funds received during the period of 2019–2023 from non-public, non-grant sources (e.g. licences sold, spin-off revenues, donations, etc.). A full summary shall be provided in annex table (Table 3.5.1).

Maximum 500 words plus 200 words for each provided example of finding a new user of results and commercialization.

Self-assessment:

Department of Knowledge Transfer at BUT ensures the identification and protection of intellectual property and provide necessary support and consulting in commercialization areas, including support for establishing an innovative company based on BUT research results (start-ups and spin-offs). Detailed description is given in Self-evaluation report for Module 4. The technology transfer at FME coordinates its activities with department of Knowledge Transfer at BUT.

Principal way to transfer results into practise is the close cooperation with partners. Long-established and proven strategy at FME for transferring results into practice is typically established in the following steps:

- a) Initiation of partnerships: Cooperation with partners from the academic and private sector is predominantly based on key persons, most often professors
- b) Establishing collaboration at a lower level: The initiated collaboration is explored in the form of study visits of researchers or the implementation of partial R&D&I contract research projects.
- c) Establishment of deeper collaboration: Based on the proven collaboration at a lower level, the collaboration moves into the form of long-term collaborative R&D&I projects, typically supported by grant programmes or directly funded by the partner.
- d) Maintaining long-term collaboration: FME and the partner organisation collaborate on selected scientific areas over a long period of time.

Marketing activities represent important way of finding a new user of results and commercialization. We present new results at [the MSV International Engineering Fair](#) that is the most important industrial fair in Central Europe. CaviPlasma described in the precious chapter is the typical example. We have also managed to introduce mechanisms that use external experts for consultancy to support the commercialisation of R&D&I results and the establishment of start-ups/spin-offs. We cooperate closely with the [South Moravian Innovation Center](#) (JIC), a national start-up incubator and its experts.

³¹ In the case of military HEIs, their specific position is taken into account when evaluating the commercialisation/evaluation of R&D&I results.

³² If the commercialisation of R&D&I results is carried out in this way.

In 2021 and 2022 the income from the commercialization of the results of applied research were increased twice comparing to previous two years. FME introduced financial motivation for researchers to further increase the income from the commercialization. This measure led to a significant increase in commercialization revenues. Compared to previous years, these revenues increased 15 times. Non-public revenues (Table 3.5.1) received during the period under evaluation can be divided into two categories. The first one relates to the licences sold for products developed at FME. The second one (called other) relates to the contributions of companies to the National centres of competence mentioned in the Chapter 3.3 to be able to use the results obtained in those projects.

Moreover, the support of student teams represents significant part of this effort. [TU Brno racing](#) team annually participates in the worldwide competition - Formula Student. It helps students not only to obtain new skills, but also it plays a pivotal role in establishing new start-up companies by leveraging its strong foundation in engineering, innovation, and practical experience. During the evaluated period we provided support to the start-up TechMountain s.r.o. established by [students from FME and FEEC](#).

Following products and start-up/spin-off companies represent typical examples of the transfer of results and the commercialisation of R&D&I results.

The prototype of the ultra-high-vacuum scanning electron microscopy/scanning probe microscopy (UHV SEM/SPM) apparatus was developed together with TESCAN Brno and the Institute of Physics and Technology of the Academy of Sciences of the Czech Republic within the framework of the AMISPEC Competence Center project, which was coordinated by the Institute of Physical Engineering at Faculty of Mechanical Engineering. It enables their imaging with nanometer resolution. In this way, it is possible to monitor in real time, for example, catalytic reactions (platinum, copper oxidation), the growth of gallium nitride nanocrystals for UV detectors, the study of the initial stages of thin layer growth, the growth of nanowires prepared directly in the described apparatus using the VLS (Vapour Liquid Solid) method, or the study of low-dimensional graphene-based components. Due to the top parameters of the functional prototype of the UHV SEM/SPM apparatus, the developed ultra-vacuum electron tube was successfully included in the product portfolio of TESCAN ORSAY HOLDING a.s. Proof of the top level of the derived LiteScope product is the number of research institutions that have already purchased or used it. In 2023 the licence was sold to TESCAN Brno for 77515 EUR.

Software for route planning optimization described in more details in Section 3.4 was created based on the cooperation of the Institute of Mathematics FME BUT with the company Wereldo.com s.r.o. as a result of the MIT Application VII project called Advanced Tracing Software for Various Types of Trucks, reg. no. CZ.01.1.02/0.0/0.0/ 19_262/0020200, from 2021-2023. The algorithm was purchased in 2023 by Wereldo.com s.r.o. as part of the Agreement on the Use of Results for 19448 EUR and is currently used for tracking various types of freight transport.

Ballistic Recovery Systems for General Aviation and Unmanned Aerial Vehicles (UAV) as a result of research done at the Institute of Aerospace Engineering FME BUT on Ballistic Recovery Systems for use in a variety of aircraft applications involving both small transport aircraft and UAV aerial vehicles. The main results are patents, for example patent EP3050805 Emergency equipment for unmanned aerial vehicles or patent US 10,202,198 B2 Life-saving equipment for unmanned air vehicles. The research led to the creation of a system for drones and UAVs covered by US and EPO patents hold by BUT and company Galaxy. The patent covers unique solution for extremely fast and reliable high-performance digitally controlled ballistic system concept for UAVs with take-off weight

ranging from just less than 1kg up to 50kg and speeds up to 350 km/h. System was completely designed, tested and qualified and is now in serial production with commercial success over the world. More than 5 years of intensive development in the area of ballistic recovery systems in tight collaboration between FME BUT and industry partner Galaxy GRS lead to deployment of unique and novel technology directly commercialized by mentioned company. The income from the licences sold was about 50.000 EUR.

Optical tribometer was developed at Tribology group at FME BUT. It allows to observe the lubricant film formation inside an insulated and highly loaded elastohydrodynamic contact, thus optimizing the minimization of friction and wear losses incl. solution of temperature conditions of materials and measurement of lubricating film properties. Its commercialization became in 2016 when a functional sample of optical tribometer for measuring very thin lubricating films was sold for 452100 EUR to a Japanese automobile manufacturer (represented by technology company K.K.IRISU, Tokyo, Japan) as part of contract research. In 2019 a new prototype for Forschungsstelle für Zahnräder und Getriebebau (FZG), Technische Universität München, Germany was sold for 126100 EUR. In 2023 innovated optical tribometer that significantly enhances the study of grease distribution under realistic conditions within rolling bearings was sold for 309000 EUR to Japanese petroleum company Eneos Corporation (represented by technology company K.K.IRISU, Tokyo, Japan). Follow-up research tasks, using the principle of a unique method of calorimetric interferometry for other applications/prototypes for laboratory and industrial purposes. In late 2023 an analysis was done by external expert to consider the possibility to establish a spin-off company and suggested its focus. Currently, the optimum procedures are considered.

3Deposition s.r.o., a spin-off company founded in late 2020, demonstrated the viability of its prototype 3D printing technology in construction (3DCP) printer through various public projects. Notably, the company created the world's first parkour playground using 3DCP. This groundbreaking playground, located in Prague, received TÜV safety certification and is publicly accessible, showcasing the innovative application of 3DCP technology in recreational facilities. Using advanced additive manufacturing techniques, the company reduces material requirements and focuses on sustainable technologies using recycled and biodegradable materials, contributing to resource conservation. At EXPO 2020 Dubai, the research team highlighted their advancements in additive manufacturing, enhancing the Czech industry's global reputation. The permanent exhibition at the Czech national pavilion demonstrated the innovative capabilities of 3Deposition and Fillamentum Manufacturing a.s.

Grixi s.r.o., a start-up company, focusing on applying this technology to e-bikes and electric motorbikes. This technology is expected to increase the comfort of rail transport, making it more attractive to the population. Increased usage of this ecological mode of transport will reduce the carbon footprint and improve quality of life. The research team developed a world-unique method for designing magnetorheological (MR) dampers, which enables the design of dampers with excellent transient properties. The world's fastest damper with a response time of 1.2 ms was developed and tested, which was more than 20 times shorter than the standard design. The fast response of the damper is key to the effectiveness of the so-called semi-active control, and this breakthrough opened the door to a number of applications of this technology in industry. Based on an analysis of the potential market application the team further expanded the application of MR technology to electric bicycles and motorcycles, where significant improvements in comfort and

ride quality were again demonstrated. This activity led to the founding of the start-up company GRIXI s.r.o.

Table 3.5.1 - Summary of non-public revenues received during the period under evaluation

Type of revenue	Revenue (in thousands CZK/EUR)				
	2019	2020	2021	2022	2023
Licence	276/10 887	778/30 690	405/15 976	403/15 897	1 513/59 684
Other	-	8/315	309/12 189	239/9 428	8 367/330 059
Total in K CZK	276	786	714	642	9 880
Total in EUR	10 887	31 005	28 165	25 325	389 743

Note: Enter funds raised for R&D&I from non-public sources besides grants or contract research (e.g. licences sold, spin-off company revenues, donations, etc.) in the calendar year.

POPULARIZATION OF VAVAI

3.6 The most important activities in the field of popularization of R&D&I and communication with the public

The evaluated unit shall briefly describe its main activities related to the popularisation of R&D&I and communication with the public (e.g. popularisation lectures, citizen science initiatives, etc.) during the period of 2019–2023 and provide up to 10 examples that it considers the most significant.

Maximum 500 words plus 200 words for each example given.

Self-assessment:

The Faculty of Mechanical Engineering focused intensively on raising awareness of its scientific and innovation activities between 2019 and 2023. The main goal was to connect the professional and general public, bringing engineering and applied sciences closer as key fields for the future.

The faculty maintained effective communication with the public through basic communication channels with broad reach, such as the Faculty's and specialized websites, media, social networks, and press releases. These communication channels attract tens of thousands of visitors annually. Press releases played a key role in communicating the results of research, development, and innovation. Thanks to these releases, research outcomes were covered by both mainstream and specialized media, significantly increasing awareness of the faculty's scientific achievements. Some of the topics communicated between 2019 and 2023 included: Digital Twin of a Robotic Cell, Use of Waste for 3D Printing, Use of Algae for Flue Gas Cleaning, Oxygen Production, and Biofuel, Research into the Behavior of Hazardous Fibers Using a Unique Lung Model, Custom Joint Replacements for Patients, Studying the Solar Corona Using Eclipse Images, Caviplasma Technology for Water Purification Using Low-Temperature Plasma, Sparker Aircraft, Use of a Climate Chamber for Testing Astronauts' Cognitive Functions, Solar Corona Images, and the Total Solar Eclipse Expedition.

We recognize the crucial role that scientists play in popularization efforts. Therefore, since 2022, it has repeatedly organized the "Science in the Media" seminar. This seminar is designed for PhD students and scientific and academic staff who want to learn more about how the media work and how to communicate with them.

The faculty presented its research successes and capacities, as well as related student projects, in various ways at specialized events and platforms. These activities included the Researchers' Night, the Science and Technology Festival, Maker Faire, Vida!Robots, and Science Slam. One of the most important events was the presentation of Research, Development, and Innovation (R&D&I) at the International Engineering Fair, where the faculty annually showcases the most interesting results of the year. The faculty also sought to utilize opportunities for popularizing R&D&I at events that might not seem directly related to this theme, such as Job and Education Fairs, Gaudeamus Higher Education Fairs, and May Day celebrations.

In addition to actively participating in professional events and established platforms, the Faculty also organized its own outreach programs and events at its facilities and outside the campus. These included popular science lectures (Science and Technology Club), Open House Days, year-round team activities of student teams (TU Brno Racing, Pneumobil Racing Team, Chicken Wings, and StrojLab), high school student competitions (Mathematical Competition MATHING, Roboti@FSI), Student Professional Activities, Summer Schools for High School Students, FabLab Experience, BUT Junior, and the Space Week 2022 Event in Brno. In 2022 and 2023, the faculty presented selected research topics and notable individuals through an outdoor exhibition in downtown Brno. In 2022, the exhibition showcased the success stories of FME alumni and their results, while in 2023, the exhibition highlighted the research activities of current FME students.

Popularization of New Water Purification Technology: CaviPlasma – Overview of Activities and Initiatives

In 2021, researchers from the Faculty of Mechanical Engineering together with their partners introduced a new technology for water purification using low-temperature plasma. The device is capable of removing chemical residues from water, such as estrogens from contraceptives, and it also eliminates pathogenic microorganisms like cyanobacteria and bacteria. The CaviPlasma technology is protected by patents.

Faculty of Mechanical Engineering issued a press release about the new technology and organized a press conference, ensuring wider media coverage of the project. CaviPlasma was also featured on the Good Morning program on Czech Television, reaching a broad audience. Information about the research has been and continues to be available on the [faculty website](#) and social media platforms. The project gained significant attention at the International Industrial Fair in 2021, where it was [awarded a Gold Medal](#). Additionally, CaviPlasma received the prestigious Transfera Technology Day Award 2020 and [the Technology Agency of the Czech Republic Award 2024](#).

All these awards were communicated through [the faculty's website](#) and social media channels.

Researchers' Night

The Faculty of Mechanical Engineering participates annually in the nationwide event "Researchers' Night" which focuses on promoting science and technology to the general public. Each year, the faculty prepares a diverse program including interactive demonstrations, lectures, workshops, and laboratory tours, all related to the main theme of the given year: Care for the Planet (2019), Man and Robot (2020), Time (2021), All Senses (2022), and Secrets (2023). In 2019 and 2021, FME presented its activities at the Technical Museum in Brno, a long-time partner of the faculty. Since 2022, the faculty has begun hosting the Researchers' Night at its own campus, allowing the public to gain an even better insight into its research activities, especially through tours of specialized laboratories. Every year, the faculty welcomes approximately 1,500 visitors on this occasion, giving them the opportunity to explore research activities and technological innovations.

Science Slam

[In 2022, the faculty participated in the Science Slam](#). This is a platform for popularizing science in various forms: live performances, videos, or podcasts. The main component is a science-popularization competition, where researchers present their work in an entertaining way. The goal is to convey not only enthusiasm for science but also a piece of knowledge itself to the audience. Faculty took part in the thirteenth edition of the Science Slam, which was dedicated to women in science. One of the scientists who gave the audience a glimpse into her research was assoc. prof. Simona Fialová from the Energy Institute at FME BUT. At the Viktor Kaplan Department of Fluid Engineering, she focuses, among other topics, on hydrophobia, and thus named her presentation "Hydrophobia in Practice (To Stick or Not to Stick)."

International Industrial Fair

An important role in the popularization of science and innovation is played by the International Engineering Fair. The International Industrial Fair provides an opportunity to present the latest scientific findings, technological innovations, and industrial applications to a wide range of visitors, including professionals, industrial partners, students, and potential future entrants to technical fields. The fair also serves as a platform for networking and establishing collaborations with industrial partners, contributing to technology transfer and the support of applied research. For young visitors, especially students and potential future applicants, the International Industrial Fair

is an inspirational place where they can see the real-world impact of science on industry and society. The faculty has repeatedly received significant recognition and awards at the fair. Among the highest honors are the Gold Medal, which FME won in [2023 for the Sparker Aircraft](#), in 2021 for the Multifunctional [BUD 100/7000 MULTI](#) Grinding Machine, and also for the [Caviplasma Technology](#), and in 2019 for the [Digital Twin of a Robotic Cell](#), and its commissioning. Participation in the fair, presentation of projects, and any successes have always been communicated to both the professional and general public in an appropriate manner.

Space Week 2022 Event Brno

In 2022, FME organized an event that brought together experts from the space industry and education sectors. Around a hundred guests attended, including representatives from domestic universities as well as international guests from universities, companies, and ESA. The event was opened by the Rector of Brno University of Technology (BUT) Ladislav Janíček, along with the Mayor of Brno Markéta Vaňková, the Dean of the Faculty of Science at Masaryk University Tomáš Kašparovský, and Václav Kobra, Director of the Department of Intelligent Transport Systems, Space Activities, and Research, Development, and Innovation at the Ministry of Transport. The first keynote speaker of the day was Thu Jennifer Ngo-Anh from the European Space Agency (ESA), who spoke about ESA's plans for future human spaceflights. The program also included a panel discussion with representatives from companies in the space industry, as well as a discussion on education and science related to space exploration. Among the speakers was professor Miloslav Druckmüller, a leading expert on solar corona imaging from FME BUT, who was joined remotely by his colleague Shadia Habbal from the University of Hawai'i. A recording of the event is publicly available on the [faculty's YouTube channel](#).

Open Days

One of the key activities in the area of public communication was [the regular Open Days](#), which were highly popular each year. The Faculty targeted not only potential applicants but also the general public. Visitors had the opportunity to tour laboratories, see advanced technologies, and meet experts from various fields of engineering and applied sciences. Open Days were held twice each academic year, from December to February. During the COVID period, they were moved to an online format. Each in-person Open Day at the Faculty of Mechanical Engineering attracted 400-500 visitors.

BUT Junior

BUT Junior is a project of the Brno University of Technology aimed at students of primary schools and junior high schools. Its goal is to introduce selected students to the campus of BUT, its academic premises, modern technologies, and the latest findings from scientific activities at BUT's research laboratories. Through this, the program aims to positively foster participants' interest in studying, particularly in the field of technical sciences. The FME has been involved in this [popularization initiative from its inception](#). For example, in 2021, the program participants attended a lecture titled "Journey to the Sun," presented by Jana Hoderová, from the Institute of Mathematics. She introduced students to the natural phenomenon of solar eclipses, explained the concept of the solar corona, and discussed how to capture it in photographs. After the introductory lecture, students could choose between two activities based on their interests. Colleagues from the Mechatronics Laboratory engaged students in the program "Show What You Can Do with LEGO MINDSTORMS,"

and colleagues from the Institute of Machine and Industrial Design allowed students to explore the world of 3D printing.

Summer Schools for High School Students

Since 2021, the Faculty of Mechanical Engineering has been organizing [summer schools for high school students](#), which also serve as a significant tool for popularizing science and technology. These programs inspire young talents to take an interest in technical fields. During these events, the Faculty of Mechanical Engineering offers high school students the opportunity to explore the world of science through practical workshops, experiments, and tours of state-of-the-art laboratories. Students can try working with modern technologies, such as 3D printing and simulations of engineering processes, and gain a better understanding of their real-world applications. The summer schools also provide opportunities for personal meetings with experts and researchers, who share their experiences and motivate participants to pursue further studies in technical fields. Between 2021 and 2023, the following summer schools were held, each with varying numbers of sessions: Summer School of Mechatronics, Summer School of Programming, Artificial Intelligence, and Robotics, Summer School of Mechanical Engineering Technologies, Summer School of 3D Printing and Construction – IngCamp, Summer School of Pneumobil, Summer School of Design, and Summer School of Modern Manufacturing Technologies.

Competitions for High School Students

High school competitions play an important role in popularizing science, as they provide students with the opportunity to engage in solving real-life scientific and technical problems. These competitions motivate students to take a deeper interest in natural sciences, technology, and engineering by fostering creativity, analytical thinking, and teamwork. The Faculty of Mechanical Engineering regularly organizes two competitions: the Internet [Mathematics Competition MATHING](#) (formerly known as the Internet Mathematical Olympiad) and [Roboti@FSI](#). Thanks to these competitions, high school students can gain a better understanding of the possibilities of studying at technical faculties and establish connections that may inspire them in their further education. High school competitions thus not only play a crucial role in discovering and developing future scientific and technical leaders but also support the popularization of science and technology.

Popular Science Lectures by the Science and Technology Club

An important tool for disseminating scientific knowledge and technological innovations to the general public is [popular science lectures](#). These lectures offer an opportunity to explore current topics in science and technology in an understandable and engaging way. They thus contribute to building a positive relationship between the public and science and technology, and support the educational and promotional role of the faculty in the field of technical education. The Faculty of Mechanical Engineering regularly provides spaces for lectures organized by students and researchers from the Science and Technology Club. Monthly events are held throughout both the summer and winter semesters. For example, in the summer semester of 2023, the following lectures took place: Science Not Just for Scientists (lecturer: Daniel Stach), Chemistry in Food (lecturer: Olga Ryparová), New Trends in Electron Microscopy (lecturer: Ondřej Sháněl), How Viruses Infect Cells (lecturer: Pavel Plevka).

IMPLEMENTATION OF RECOMMENDATIONS

3.7 Implementation of the recommendations in Module 3

The evaluated unit will briefly describe how it has implemented the recommendations for Module 3 from the previous evaluation period, if applicable.

Maximum 1000 words.

Self-assessment:

The most significant criticisms identified in the previous evaluation of FME related to the commercialization of the results of applied research, the establishment of spin-off companies with the participation of the faculty and, in general, the use of patent protection of the outputs of the development activities of FME employees. Therefore, tasks were included in the FME 2021+ Strategic Plan, in which increased attention is paid to improving the FME assessment in the given areas. These tasks include, in particular, increasing awareness of the the Methodology for Evaluating Research Organisations and Research, Development and Innovations Purpose-tied Support Programmes (M17+) and its individual stages and modules. This also results in an increase in awareness in the academic community about the importance of reporting quality outputs of applied research and their patent protection. Attention is also paid to the settlement of contractual relations in applied research projects, where it is necessary to obtain a share of the revenues associated with the commercialization of the results of applied research.

The technology transfer department at FME has an important role, which focuses on greater awareness and support of these activities. Its structure and competence have been modified to improve its main function to provides consultations on the establishment of spin-off companies and helps in negotiations with industrial partners.

In 2021 and 2022 the income from the commercialization of the results of applied research were increased twice comparing previous two years. Nevertheless, there is continuous effort to improve it. Therefore, FME introduced financial motivation for researchers to further increase the income from the commercialization of the results of applied research. It is involved in the FME budged as a direct support since 2023 for further stimulation in this field. This measure led to a significant increase in commercialization revenues. Compared to previous years, these revenues increased 15 times and reached almost 400 thousand EUR. During 2024, these revenues were again significantly increased.

Moreover, there are some promising technologies with commercialization perspective as CaviPlasma: A large-throughput technology for plasma treatment of contaminated water using peroxide chemistry. It combines hydro-mechanical effects, i.e., mechanical stress and efficient mixing of agents generated using an electric discharge in the reduced-pressure environment of void of cavitation cloud, with electro-mechanical stress and UV radiation. This results in very promising biocidal and decontamination effects on plasma-treated contaminated water. Representative examples of the results are focused on the removal of toxic cyanobacteria from water achieving a complete inactivation even after a single passage, or the remediation of wastewater sampled at municipal treatment plant from the residual contamination of pharmaceuticals, hormones and their metabolites (> 90% reduction).

We have also taken measures to support the establishment of start-ups/spin-offs. We have managed to introduce mechanisms that use external experts for consultancy in this area with the aim of finding the optimal form of using the potential of our researchers. For example, 3Dposition company as FME spin-off company was established since the evaluation. Its mission is to transfer the advanced technologies related to additive manufacturing and 3D printing to industry and to

provide services and produce hardware for 3D printing from plastic, concrete and other innovative materials. It strives to use recycled materials and incorporate 3D printing technology as a tool for circular economy. The start-up company Grixi s.r.o., focusing on applying this technology to e-bikes and electric motorbikes was successfully prepared in 2023 and finally established in 2024. This technology is expected to increase the comfort of rail transport, making it more attractive to the population. Increased usage of this ecological mode of transport will reduce the carbon footprint and improve quality of life. Moreover, start-ups Lightigo s.r.o., Lightigo Space s.r.o. and Lightigo Development s.r.o. and CactuX s.r.o. established at CEITEC were founded by researchers that are double affiliated (FME and CEITEC).

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: CEITEC BUT

FORD: 1 - Natural sciences

SOCIAL CONTRIBUTION OF THE EVALUATED UNIT

3.1 Introductory information about the unit under evaluation

The evaluated unit will describe its mission and vision and provide a general self-reflection of the societal contribution of R&D&I, along with its long-term goals in the fields it develops. The distribution of research activities by type of research will also be commented on.¹ The evaluated unit will describe its organisational structure and size (staffing, number of students, number of study programmes implemented, etc.) based on the data provided in annex tables 3.1.1 to 3.1.6.

Maximum 1000 words.

This is a non-rated indicator that serves as an introduction to the evaluated unit, providing context for data in indicators 3.2-3.7.

Self-assessment: The Central European Institute of Technology at Brno University of Technology (CEITEC BUT) stands as one of the two largest, legally independent members of the CEITEC Consortium, which comprises four universities and two research institutes in the city of Brno, Czech Republic. Each partner within the consortium operates as an independent legal entity, either a university or an R&D institute, with CEITEC BUT serving as Brno University of Technology research institute. Established in 2011, CEITEC BUT received financial support from the European structural funds and the Ministry of Education, Youth, and Sports of the Czech Republic, with an initial funding of 210 million EUR. Notably, 38% (80 million EUR) of this funding was specifically invested in CEITEC BUT. This investment positioned CEITEC as the recipient of the second-largest science investment in the Czech Republic at the time, establishing it as the leading national research institution in life sciences, advanced materials, and nanotechnologies. Today, CEITEC operates with an annual budget of approximately €50 million, with CEITEC BUT accounting for around €20 million of this total. Since its establishment, CEITEC BUT has achieved significant progress. It has secured three ERC grants, coordinated and participated in over 750 hundreds R&I projects and publishes approximately 280 scientific papers annually, with majority of them appearing in Q1 journals. Qualitatively, CEITEC consortium currently holds fourth place in the Nature Index within the Czech Republic, following the Czech Academy of Sciences, the Charles University, and the Masaryk University—all of which operate with significantly larger budgets and human resources. The institute has also established an international PhD school and facilitated the creation of six startup companies in deep tech. Notably, CEITEC BUT maintains the only open-access 2,000 sq.m. clean room research infrastructure in the country, equipped with full-scale nano and micro-manufacturing facilities and respective analytical tools.

¹ Basic, applied, contract, artistic research (see Definition of Terms in Methodology HEI2025+).

CEITEC operates with a clear **mission and vision**, as outlined in our strategic document, the CEITEC BUT Strategy Framework 2020–2030. Our mission is to advance knowledge, seek truth, and educate in the fields of life sciences, advanced materials, and cutting-edge technologies to address the challenges of the 21st century.

Our vision is to establish CEITEC BUT as a leading European research institute, recognized globally for ground-breaking research and innovation. Utilizing the expertise of top-tier scientists and state-of-the-art, open-access infrastructure, we aim to drive key innovations and foster impactful collaborations with international partners. At CEITEC BUT, we are committed to creating a prestigious and fulfilling environment for both scientists and employees, embodying excellence in research and education.

The aforementioned document, which will be provided to the committee during the evaluation process, further outlines four strategic priorities essential to achieving CEITEC BUT's mission and vision: Research and Innovation, Education and Students, Community and People and Services and Infrastructure.

Priority 1: Research and Innovation

The autonomy of research groups is key to CEITEC's success and fundamental to its R&I excellence. Research Group Leaders (RGLs) are selected based on their international merit and are regularly evaluated by an international scientific advisory board. CEITEC currently encompasses 16 research groups, comprising approximately 400 researchers working in physics, chemistry, biophysics, biochemistry, materials science, advanced cybernetics, and informatics.

Given limited access to institutional funding, financial sustainability is a critical focus alongside scientific excellence. CEITEC employs a balanced strategy to secure funding through international grants, institutional support, industrial collaborations, and national funding sources. The institute actively fosters innovation, recognizing top ideas with its annual entrepreneurship award and exploring innovative methods to support startup companies such as CEITEC Innovation Accelerator.

Priority 2: Education and Students

The CEITEC BUT PhD School, established in 2013, is recognized as the first of its kind in the Czech Republic. It currently hosts an international group of approximately 150 young researchers, with 55% of students coming from over 24 countries worldwide. The PhD School provides comprehensive support to students, including regular PhD retreats and with student conference or an annual R&I competition that awards research budgets of up to €8,000 to around 25 recipients annually. Additional initiatives include entrepreneurship awards, travel bursaries, and various other „soft-skills“ measures designed to enhance students' academic and professional development.

Priority 3: Community and People

CEITEC BUT is committed to fostering a supportive, inclusive, and engaging work environment. As part of the university's HR Award initiative, we prioritize fair employment practices, professional development opportunities, and transparent governance. To strengthen community cohesion, CEITEC organizes annual events such as family days, festive celebrations (Christmas, Chinese New Year, Diwali, St. Nicholas), and Open Science Nights.

CEITEC also takes its societal responsibility seriously by developing partnerships with schools, offering regular nanotechnology training for middle school teachers and students, and engaging with the media and local communities to popularize scientific achievements and build public awareness.

Priority 4: Services and Infrastructure

CEITEC BUT's 2,000m² nanotechnology clean room is a state-of-the-art research infrastructure, unique in Central Europe. This facility provides open access for manufacturing and analyzing complex nano- and micro-structures, developing advanced chips, and serving as an educational resource for students. As a national nanotechnology laboratory, only about 40% of the facility is used by CEITEC employees, with the remaining capacity utilized by other institutes both domestically and internationally.

Maintaining this competitive advantage is a priority, supported by regular reinvestment and strategic partnerships, such as the collaboration with the Institute of Physics at the Czech Academy of Sciences to establish the Czech Nanolab national research infrastructure. This cutting-edge facility positions CEITEC BUT as a key driver of innovation and research excellence in the Czech Republic and beyond.

Table 3.1.1 - Staffing per FTE² *Note: Due to legal reasons, the tables below do not accurately represent the actual FTE of academic staff at CEITEC. Because of their teaching duties at various faculties, professors and other academic staff are typically employed at the faculty level under their "academic capacity" whereas their legal employment status at CEITEC is classified as "researcher." For instance, towards the end of 2023, we employed 21 professors with an FTE of 11.38, while the table below shows none. However, to maintain consistency with the rest of the university, we have chosen to use the same data sources across the entire institution.*

Academic/professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	0,2/0	0,2/1	0/0	0/0	0/0	0,4/1
Associate Professor	0/0	0/0	0/0	2,1/1	0,1/0	2,2/0
Assistant Professor	4,9/0,7	5,9/1,4	3,1/1,6	1,6/0,7	1,5/0,6	17,0/5,0
Assistant	0/0	0/0	0/0	0/0	0/0	0/0
R&D Personnel ³	4,1/1	3/1	0/0	0/0	0/0	7,1/2
Researchers in other categories ⁴	72,0/14,2	74,5/11,9	101,9/19,8	149,8/40,2	139,0/32,2	537,1/118,3
Technical and economic staff ⁵	165,6/59,0	152,2/60,1	102,7/50,9	63,7/40,1	61,5/41,1	545,7/251,2
Scientific, research and development staff involved in teaching activities	22,5/6,1	30,5/4,5	31,9/3,3	33,5/3,4	29,8/2,1	148,2/19,4

² The average number of hours worked is calculated as the ratio of the total number of hours actually worked during the reference period, from 1 January to 31 December, by all staff (including agreement on work activity, excluding agreement on work performance) to the total annual working time pool per full-time employee. The full-time status of the worker in the evaluated unit is always reported. If an employee holds more than one type of full-time job within the evaluated unit, the total sum of the two shall be reported.

³ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

⁴ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

⁵ Who participates in the management and support of R&D&I in the institution.

Early career researchers ⁶	20,1/3,0	31,1/5,8	31,7/5,4	29,4/5,6	37,8/10,5	150,1/30,3
Total ⁷	289,4/84,0	297,4/85,7	271,3/81,0	280,1/91,0	269,7/86,5	1407,9/428,2

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

3.1.2 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2019 (numbers of physical employees and personnel)⁸

Academic/ professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	0	0	0	0	0	0	1	0
Associate Professor	0	0	0	0	0	0	0	0	0	0	0	0
Assistant Professor	0	0	5	0	1	0	0	0	0	0	0	0
Assistant	0	0	0	0	0	0	0	0	0	0	0	0
R&D Personnel ⁹	0	0	4	1	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁰	2	0	37	7	39	13	12	1	5	0	3	0
Technical and economic staff ¹¹	101	31	77	30	38	16	12	7	4	2	0	0
Scientific, research and development staff involved in teaching activities	0	0	21	6	9	0	1	0	0	0	0	0
Early career researcher ¹²	0	0	10	4	0	0	0	0	0	0	0	0
Total ¹³	103	31	154	48	87	29	25	8	9	2	4	0

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D Personnel, Researchers in other categories and Technical and economic staff are mutually exclusive, i.e. one staff member is reported in only one category. The categories of scientific, research and development staff involved in teaching activities and early career researchers are reported collectively for all the above-mentioned categories.

⁶ See Definition of Terms in Methodology HEI2025+.

⁷ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

⁸ The total number of employees/workers as of 31st December of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

⁹ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁰ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹¹ Who participates in the management and support of R&D&I in the institution.

¹² See Definition of Terms in Methodology HEI2025+.

¹³ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I Personnel, Researchers in other categories and technical and economic staff.

3.1.3 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2023 (numbers of physical employees and personnel)¹⁴

Academic/ professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	0	0	0	0	0	0	0	0
Associate Professor	0	0	0	0	0	0	0	0	0	0	0	0
Assistant Professor	0	0	0	0	2	1	0	0	0	0	0	0
Assistant	0	0	0	0	0	0	0	0	0	0	0	0
R&D Personnel ¹⁵	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁶	73	27	60	15	66	14	18	5	8	1	4	0
Technical and economic staff ¹⁷	4	3	18	13	26	18	17	11	7	3	0	0
Scientific, research and development staff involved in teaching activities	0	0	17	1	14	0	3	1	1	0	0	0
Early career researcher ¹⁸	0	0	47	16	0	0	0	0	0	0	0	0
Total ¹⁹	77	30	142	45	108	33	38	17	16	4	4	0

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

Table 3.1.4 – Students

Type of study	2019		2020		2021		2022		2023		Total	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Undergraduate												

¹⁴ The total number of employees/workers as at 31.12. of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

¹⁵ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁶ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹⁷ Who participates in the management and support of R&D&I in the institution.

¹⁸ See Definition of Terms in Methodology HEI2025+.

¹⁹ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

Master's ²⁰												
Doctoral	127	46	136	54	155	58	166	67	160	69	245	96
Lifelong Learning Courses												
Total	127	46	136	54	155	58	166	67	160	69	245	96

Table 3.1.5 - Study programmes in Czech/English

Type of study programme	Total ²¹ / Of which professional study programmes											
	2019		2020		2021		2022		2023		Total	
Undergraduate	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Master's	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Doctoral	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	2 / 2	0 / 0
Lifelong Learning courses												
Total	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	1 / 1	0 / 0	2 / 2	0 / 0

Note: For each SP type, enter the number of SPs in Czech language in the first cell and insert the number of SPs in English language after the slash in the same cell (e.g. 15/3), enter the number of professional SPs in Czech language in the second cell and insert the number of professional SPs in English language after the slash. Follow a similar procedure in the last column of the table (Total).

3.1.6 – R&D&I capacities

R&D&I field	FORD	FORD share [%]	Predominant type of research	Total share of industry group [%]
1. Natural Sciences	1.1 Mathematics	1.5%	Basic Research	47.0%
	1.2 Computer and information sciences	0.8%	Applied Research	
	1.3 Physical sciences	13.2%	Basic Research	
	1.4 Chemical sciences	22.9%	Balanced basic and applied research	
	1.5 Earth and related environmental sciences	2.1%	Balanced basic and applied research	
	1.6 Biological sciences	6.2%	Basic Research	
	1.7 Other natural sciences	0.3%	Balanced basic and applied research	
2. Engineering and Technology	2.1 Civil engineering	0.2%	Applied Research	45.1%
	2.2 Electrical engineering, Electronic engineering, Information engineering	4.6%	Balanced basic and applied research	
	2.3 Mechanical engineering	2.1%	Applied Research	

²⁰ All master's degree students are listed, regardless of the length of their programme of study.

²¹ The total number of study programmes for which admissions have been announced in a given academic year.

	2.4 Chemical engineering	0.9%	Applied Research	
	2.5 Materials engineering	18.4%	Applied Research	
	2.6 Medical engineering	1.1%	Balanced basic and applied research	
	2.7 Environmental engineering	2.1%	Applied Research	
	2.8 Environmental biotechnology	0.8%	Balanced basic and applied research	
	2.9 Industrial biotechnology	1.0%	Basic Research	
	2.10 Nanotechnology	8.0%	Balanced basic and applied research	
	2.11 Other engineering and technologies	5.8%	Balanced basic and applied research	
3. Medical and Health Sciences	3.1 Basic medicine	2.1%	Balanced basic and applied research	4.4%
	3.2 Clinical medicine	1.7%	Balanced basic and applied research	
	3.3 Health sciences	0.6%	Balanced basic and applied research	
4. Agricultural and veterinary sciences	4.1 Agriculture, Forestry, and Fisheries	1.7%	Applied Research	3.4%
	4.2 Animal and Dairy science	0.4%	Applied Research	
	4.3 Veterinary science	0.2%	Applied Research	
	4.4 Other agricultural sciences	1.2%	Applied Research	
5. Social Sciences	5.1 Psychology and cognitive sciences	0.0%	Zvolte položku.	0%
	5.2 Economics and Business	0.0%	Zvolte položku.	
	5.3 Education	0.0%	Zvolte položku.	
	5.4 Sociology	0.0%	Zvolte položku.	
	5.5 Law	0.0%	Zvolte položku.	
	5.6 Political science	0.0%	Zvolte položku.	
	5.7 Social and economic geography	0.0%	Zvolte položku.	
	5.8 Media and communications	0.0%	Zvolte položku.	
	5.9 Other social sciences	0.0%	Zvolte položku.	
6. Humanities and the Arts	6.1 History and Archaeology	0.0%	Zvolte položku.	0%
	6.2 Languages and Literature	0.0%	Zvolte položku.	
	6.3 Philosophy, Ethics and Religion	0.0%	Zvolte položku.	
	6.4 Arts (arts, history of arts, performing arts, music)	0.0%	Zvolte položku.	
	6.5 Other Humanities and the Arts	0.0%	Zvolte položku.	
Total		100 %	-	100 %

RECOGNITION BY THE RESEARCH COMMUNITY

3.2 Recognition by the research community

The evaluated unit will briefly comment on its position in the research community. It shall consider individual and other prestigious R&D&I awards, participation of its academic staff in the editorial boards of international scientific journals, elected membership in professional societies, major invited lectures given by the evaluated unit's academic staff abroad or by foreign scientists and other relevant guests at the evaluated unit. Additionally, it will address the involvement of staff in the evaluation of national or European project/programme calls over the period of 2019–2023 based on the data provided in annex tables 3.2.1 to 3.2.5 (max. 10 most relevant items). If necessary, the evaluated unit shall list any additional services to the scientific community that it considers relevant.

Maximum 1000 words.

Self-assessment:

Aside from the specific measures outlined below in the respective tables (to be discussed), the recognition of the research community is traditionally measured by its publication and citation profile. During the measured period (2019–2023), CEITEC published 1,716 articles in peer-reviewed journals, with the majority appearing in Q1 (65%) and Q2 (27.5%) categories. This represents a substantial increase compared to the previous monitoring period (2014–2018), during which 1,068 documents were published, with 53.3% in Q1 and 26% in Q2 categories.

Publications from the current period have already accumulated 26,000 citations, marking a 30% increase from the 19,900 citations collected during the previous period. International collaboration, as measured by the number of papers co-authored with international partners, grew significantly from 38.2% to 64.3% (a 68% increase). Similarly, joint industrial collaboration publications increased fivefold, from 11 to 53.

Additional metrics also reflect this positive trend: the number of documents in the top 10% of journals increased by 88%, and those in the top 1% of journals grew by 44%. The average percentile improved by 12%, while the percentage of highly cited papers more than doubled, rising by 105% (from 0.37% to 0.76%). The average Category Normalized Citation Impact (CNCI) also showed a significant improvement, increasing by 13.8%.

As detailed in Tables 3.2.1 – 3.2.5 below, CEITEC scientists received over 27 awards during the evaluation period. Notable achievements include the recognition of Prof. Martin Pumera as a “Highly Cited Researcher” by Clarivate in 2019, 2020, and 2021, as well as Prof. Miroslav Kolíbal being named the absolute winner of the Technology Agency of the Czech Republic prizes in 2021, following his receipt of the award in the Business category for his SEM atomic hydrogen source.

Regarding Table 3.2.2, CEITEC scientists actively participate on the editorial boards of 14 journals, primarily international publications. A selection of invited talks delivered by CEITEC scientists is provided in Table 3.2.3. The total number of back-trackable invited talks during the evaluation period is approximately 20. However, it is important to note that this period was significantly affected by the COVID-19 pandemic, which severely restricted international travel and opportunities to present at conferences and institutions abroad.

The same travel restrictions applied to the CEITEC Seminar Series (Table 3.2.4), a long-standing CEITEC event where researchers are regularly invited to give talks at the institution. Despite these challenges, we successfully organized 43 invited lectures during the monitored period. However, it should be noted that the majority of these lectures took place in the post-COVID period. On average, CEITEC

organizes between 10 and 18 seminars annually (see more at <https://www.ceitec.eu/seminar-series/t11120>).

CEITEC scientists are also regularly involved in national and international project evaluations (table 3.2.5) including, for example European Research Council, EIC, FET or MCSA.

Table 3.2.1 - Prestigious R&D&I awards granted during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the award	Awarding institution
Oleksii Laguta	Danubius Young Scientist Award 2020	Austrian Ministry of Science and Education
Ing. Markéta Tesařová, Ph.D.	Werner von Siemens award: Award for outstanding quality of female scientific work	Siemens
M.Sc. Edgar Benjamin Montufar Jimenez, Ph.D.	E.B. Montufar - Recognized international award, Prominent Mexican Researcher	Granted by government of Mexico
Prof. RNDr. Karel Maca, Dr.	Fellow of ECERS (year 2019)	European Ceramic Society (the first Czech scientist to receive this Award)
Prof. Martin Pumera	Highly Cited Researcher 2019	Clarivate
Prof. Martin Pumera	Highly Cited Researcher 2020	Clarivate
Prof. Martin Pumera	Highly Cited Researcher 2021	Clarivate
Prof. RNDr. Radim Chmelík, Ph.D.	CSMS prize for significant merits in the development of microscopic methods, 2021 /	Czechoslovak Microscopy Society
Miroslav Kolíbal, prof. Ing., Ph.D.	Czech Best Business Idea prize	Technology Agency of the Czech Republic
Zdenek Jakub	Danubius Young Scientist Award 2023	Austrian Ministry of Science and Education

Note: Provide up to 10 examples.

Table 3.2.2 Participation of academic staff of the evaluated unit in editorial boards of international scientific journals during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of scientific journal, ISSN
Prof. Ing. Jozef Kaiser, Ph.D.	Scientific Data, Nature Publishing Group, ISSN 2052-4463 (Online)
Doc. Ing. Pavel Pořízka, Ph.D.	Spectrochimica Acta Part B: Atomic Spectroscopy, Print ISSN: 0584-8547
Dr.-Ing. Jan Macák	Specialty Editor - Frontiers of Nanotechnology, section Nanomaterials. ISSN 2673-3013
doc. Ing. Ladislav Čelko, Ph.D.	Engineering Failure Analysis (Elsevier) / 2023 / ISSN 1350-6307
Prof. RNDr. Karel Maca, Dr.	Processing and Application of Ceramics; ISSN: 1820-6131
Prof. RNDr. Karel Maca, Dr.	Science of Sintering; ISSN: 0350-820X
prof. RNDr. Martin Pumera, Ph.D.	Small, 1613-6829;
prof. RNDr. Martin Pumera, Ph.D.	ACS Nano, ISSN: 1936-086X;
prof. RNDr. Martin Pumera, Ph.D.	Materials Today , ISSN: 0096-4867;
Jaroslav Pokluda, prof. RNDr., CSc.	Materials Science, Springer, El. ISSN 1573-885X, Print ISSN 1068-820X

Note: Please provide up to 10 examples of academic staff participation in editorial boards of international scientific journals (e.g. editor, editorial board member, etc.).

Table 3.2.3 The most important invited lectures delivered by the academic staff of the evaluated unit at foreign institutions during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Invited lecture title	Name of host institution, or name of conference or event	Year
Prof. Eric Glowacki	Ultrathin photovoltaic devices for stimulation of the peripheral and central nervous system	Massachusetts Institute of Technology MIT, NanoBio Seminar Series	2022
Prof. Eric Glowacki	Organic thin film photocapacitors for stimulation of the peripheral nervous system	Stanford University California, Neural Engineering Seminar Series	2022
prof. RNDr. Martin Pumera, Ph.D.	New Horizons in Materials for Microrobots and Nanorobots	Nature Conferences - Microrobots and nanorobots for biotechnology, May 25-27, 2021, IFW Dresden, Germany / invited talk	2021
Prof. Ing. Jan Čechal, Ph.D	Low Energy Electron Microscopy as a tool for surface science	Weizmann Institute of Science, Seminar series	2020
Prof. RNDr. Karel Maca, Dr.	Rapid pressure-less sintering of structural and functional ceramics	The international Conference on Sintering 2023, August 27-31, 2023, Nagaragawa Convention Center, Gifu, Japan	2023
Vojtěch Uhlíř, Ph.D.	Phase Coexistence and Ultrafast Dynamics of Magnetic Order in Metamagnetic FeRh	EPFL, Switzerland, Seminar Series	2023
Prof. Luděk Žalud	Non radiation sensors, UGV for Radiation Survey	International Atomic Energy Agency - Viena	2023
Assoc. Prof. Lenka Zajíčková	Plasma polymerization aimed for biomedical application	30 th International Toki Conference on Plasma and Fusion Research 16. -19. 11. 2021 (plenary talk)	2021
Dr.-Ing. Jan Macák	Keynote talk: "Protection of Electrochemically Active Surfaces by Ultrathin Barrier Layers Using Atomic Layer Deposition"	74th ISE Annual Meeting, Lyon, France, 7.9.2023 (Keynote talk)	2023
Dr.-Ing. Jan Macák	Keynote talk "Protection of Electrochemically Active Surfaces by Ultrathin Barrier Layers Using Atomic Layer Deposition"	ISE Topical meeting, Mar de Plata, Argentina, 21.3.2023 (Keynote talk)	2023

Note: Provide up to 10 examples.

Table 3.2.4 - The most important lectures by foreign scientists and other guests relevant to R&D&I at the evaluated unit during the evaluation period

Name, surname and title(s) of the lecturer	Lecturer's employer at the time of the lecture	Invited lecture title	Year
Prof. Satoshi Hamaguchi	Osaka University	Plasma-surface interactions of atomic layer processing toward sub-nm-node semiconductor devices	2023
Dr. Alan Boyde	Queens Mary University of London	What we have learnt about bone and bones from studying racehorses: integrated studies with many microscopical methods	2023
Prof. Dr. Niko Hildebrandt	Seoul National University	Luminescent nanomaterials for FRETomic biosensing	2023
Prof. Ludvik Martinu	École Polytechnique Montreal	Multifunctional coatings for advanced optical and energy applications	2023
Prof. Josef Michl	University of Colorado	Synthesis of Porphene, an Antiaromatic Analog of Graphene	2022
Prof. Dennis Kurzbach	University of Vienna	Enhancing biochemical NMR by dissolution dynamic nuclear polarization	2022
Dr. Xenofon Strakosas	Linköping University, Sweden	Organic Bioelectronic platforms for sensing applications and selective stimulation through pH modulation or selective drug delivery	2021
Prof. Stephen SKINNER	Imperial College of London	Isotopic labelling and diffusion studies of functional oxides for energy technologies	2021
Prof. Zhijian James Shen	Stockholm University	Advanced zirconia ceramics for dentistry - processing, properties, and applications	2020
prof. Paolo VAVASSORI	CICNanogune, Spain	Perspectives of magneto-plasmonic nanostructures and crystals	2018

Note: Provide up to 10 examples.

Table 3.2.5 - Involvement in the evaluation of national/European research project/programme calls relevant to the R&D&I area at the unit during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the research project/programme call	Name of the contracting authority/guarantor project/programme call	Year
Prof. Martin Pumera	Panelist ERC-StG PE4	ERC – European Research Council	2020
Doc. Ing. Ladislav Čelko, Ph.D.	EIC Pathfinder	HORIZON EUROPE	2023
Doc. Ing. Pavel Pořízka, Ph.D.	EIC Pathfinder	Research Executive Agency delegated by the European Commission	2022
Prof. Pavel Václavek	Horizon PATHFINDER-CHALLENGES	EC REA	2021-2023
Prof. Pavel Václavek	Horizon PATHFINDER-OPEN	EC REA	2021, 2022
Prof. Pavel Václavek	H2020 FET-OPEN	EC REA	2020
Assoc. Prof. Lenka Zajíčková	MSCA Individual Fellowships	Research Executive Agency (REA)	2023
Assoc. Prof. Lenka Zajíčková	HORIZON-EIC-2021-PATHFINDERCHALLENGES-01	Research Executive Agency (REA)	2021
Dr.-Ing. Jan Macák	Reviewer and reporter, Marie Curie Skłodowska Fellowship programme.	H2020-Marie Curie Skłodowska Fellowship	2019-2023

RESEARCH PROJECTS

3.3 Research projects

The evaluated unit shall list at most 10 (considered most significant by the evaluated unit) research projects/activities (regardless of whether they are supported by public funds or based on contract research²²) that it has implemented or participated in during the period of 2019–2023²³. This should be done from the full list in annex tables (Table 3.3.1-3.3.2)²⁴, regarding particularly the results achieved or the application potential of the projects. The unit should also describe how the research projects contributed to the mission and purpose of the evaluated unit. If the evaluated unit has been a participant in listed project, it shall indicate which other entities were involved and describe its contribution to the project. The interdisciplinary aspects of the projects will also be commented on, along with any collaboration with other units of the evaluated HEI.

Maximum 300 words per project.

Self-assessment:

1. **National Feasibility Programme II: CEITEC 2020, LQ1601, February 2016 to December 2020, 1,643.5 mil CZK (65 mil. EUR)**

The main goal of this project was to ensure the sustainability and further growth of CEITEC by offering solid financial support to the research teams assembled during the initial five-year start-up phase of the institution, and in doing so, consolidating the scientific and research activity and continuous development of the research infrastructure of CEITEC for the purpose of further ensuring competitiveness in life and materials sciences. The project was designed to foster synergies between the various scientific disciplines. During the project we have managed to employ three new senior research groups leaders and two junior group leaders and financially stabilize the groups. This project was crucial in ensuring that CEITEC's vision and mission could be responsibly executed. Note, that this is a joint project with the all CEITEC partners, namely Masaryk University as a main coordinator, wherein we used approximately 525mil Kc (21mil EURO) of this funding for CEITEC VUT development alone.

2. **Eric Glowacki, OPTEL-MED, ERC Starting Grant, January 2021 to December 2025 1.5 million EUR.**

In this project Prof. Glowacki aims to develop optoelectronic nerve cuff electrodes that are significantly thinner than current clinical models by utilizing micropatterned, flexible, and biocompatible organic semiconductors. The effectiveness of targeted optoelectronic nerve stimulation is assessed through ex vivo and in vivo nerve models. By leveraging spatial patterning and localized light actuation, this research enhanced the understanding of precise and nuanced neural control. The ability to achieve wireless, highly specific neuromodulation not only advanced fundamental neuroscience but also created potential opportunities for commercialization through an intended startup venture. The project further developed into substantial further funding to support this important part of CEITEC research portfolio.

3. **Vojtěch Adam, ToMe TuM, ERC Starting Grant, January 2018 to December 2022 1.4 million EUR.**

²² For the definition of contract research for the purposes of evaluation in the HE segments, see Article 2.2.1 of the Community Framework for State Aid for Research, Development and Innovation 2014/C 198/01.

²³ Regardless of whether the projects are completed or still ongoing, provided that at least part of the project was implemented during the evaluation period.

²⁴ The evaluated unit shall only fill tables that are relevant to it.

Prof. Adam (†2024) focused his research team on the research of a protein called metallothionein, which has the ability to bind metals. He believed to prove that this protein is one of the key factors in preventing the emergence of resistance to cancer treatment with metal-based medicines. If successful, confirmation of this fact could contribute to more effective treatment of cancer in the future. Despite the thorough investigation, this question still remains to be answered. Unfortunately, Prof. Adam has tragically died soon after the project ended. Despite this grant was for an individual research group, the prestige of one of the first ERC grants in CEITEC was notable and inspiring for fulfilling the vision and mission of CEITEC organization.

4. Petr Neugebauer, THz-FRaScan-ESR, ERC Starting Grant, January 2018 to December 2022, 2 million EUR.

The main research focus of Dr. Petr Neugebauer is on method development of magnetic resonance spectroscopy, especially Electron Spin Resonance (ESR). Within the ERC Starting Grant, Peter Neugebauer developed new ESR method and designed entirely new instrument which provides further information about electron spin dynamics in THz range. The project provided CEITEC with world's unique instrumentation and push CEITEC into the world league in ESR research and development.

5. H2020 FET OPEN, main coordinator: Tomas Sikola, Project ID: 767227, January 2018 to December 2020, 2.9 mil EUR

Plasmon Enhanced Terahertz Electron Paramagnetic Resonance (PETER), CEITEC BUT was the main coordinator of this exciting project, which sought to improve the existing ESR methods with scanning technology. The uniqueness of the project was due to two related factors. First, we expected to increase the frequency of electromagnetic radiation used in the EPR spectrometers one level higher. And secondly, by inserting antennas made of gold or graphene into the beam of this radiation, it increased the sensitivity of the method by up to four levels. Here again, it should be noted that this project is one of two FET Open projects which are actually originated and coordinated from the Czech Republic, thus clearly demonstrating the quality of CEITEC Scientist and fulfilment of our vision as a leading scientific organization in the country.

6. EXPRO Peter Neugebauer January 2021 – December 2026, 2 million EURO

Building on previous research using rapidly changing frequencies in Electron Spin Resonance (ESR), this project aims to overcome existing limitations and develop a functional prototype of a combined ESR/Nuclear Magnetic Resonance (NMR) system operating at a magnetic field of 11.75 T. This corresponds to frequencies of 500 MHz for NMR and 329 GHz for ESR.

The proposed system enables hyperpolarization measurements in NMR, known as Dynamic Nuclear Polarization (DNP), which can enhance weak NMR signals. This improvement is crucial for advancing research in various fields of biology, particularly in studying the structure and dynamics of large biomolecules. Additionally, the system design can be adapted for other high-field NMR spectrometers, significantly expanding the capabilities of existing NMR instruments and optimizing their efficiency. The project is highly aligned with our strategic goal of establishing a leadership position in bespoke instrumentation techniques.

7. EXPRO Martin Pumera, March 2019 – June 2024, 2 million EURO

The primary goal of this project was to develop a fundamental understanding of the electrochemistry of layered and two-dimensional (2D) materials. These materials include monoelemental substances such as layered pnictogens (black phosphorus, layered arsenic, antimony, and bismuth), binary

materials like layered transition metal dichalcogenides and MXenes, as well as ternary materials such as metal chalcogenophosphates and their 2D counterparts.

The research aimed to answer fundamental questions about the electrochemical behavior of these materials. It explored the differences in electrochemistry between the edges and basal planes, seeking to establish general governing principles. The study also investigated how variations in crystal structures influence electroactivity and how size constraints affect electrocatalysis. Additionally, it examined the impact of atomic composition changes on electrochemical properties, the role of heteroatom dopants, impurities, and vacancies in the 2D material lattice, and the effects of material curvature on electrochemical behavior. By addressing these key aspects, advanced the fundamental knowledge of electrochemistry in layered and 2D materials, offering insights that could enhance their applications in electrocatalysis and energy-related technologies.

8. EU Teaming project RICAIP II Pavel Vaclavek, January 2029 – December 2025, 3.9million EURO

The RICAIP project aims to establish an international Industry 4.0 hub, introducing a new dimension to multi-site industrial production with strong societal impact. Its long-term vision is to transform the RICAIP testbed into a European Research Infrastructure. Led by Czech institutions—the Czech Institute of Informatics, Robotics and Cybernetics at CTU and CEITEC at Brno University of Technology—in partnership with Germany's DFKI and ZeMA, the project fosters knowledge transfer and long-term collaboration. This strategic alliance strengthens RICAIP's position as a leader in advanced industrial production research within the European Research Area.

The project is also accompanied by the investment co-funding from the Czech Government in order of approx. 14million Euro to invest in the I4.0 test rig which was partly build in the CEITEC premises and provides opportunities for SME companies to test their I4.0 processes.

9. GlaCerHub HORIZON-WIDERA-2022-ACCESS-04 June 2023 – May 2027, 3.99 million EURO

The GlaCerHub consortium aims to create a dynamic, specialist innovation ecosystem for the advanced glass and ceramics sector by stimulating new synergies between industry, academia, government, society and other European innovation Ecosystems. In the long term GlaCerHub will become a self-sustaining entity, supporting the creation, development, piloting and protection of strategic glass ceramic technologies, training of all stakeholders from the quadruple helix, and creating and supporting technology transfer. This project will have a significant impact on material research activities at CEITEC, establishing a strategic partnership with leading European research centers in ceramics and advancing CEITECs role in this cutting-edge field.

Table 3.3.1 Projects supported by public funds

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
Czech-Bavarian Cooperation		309/12,186	153/6,043	0/0	0/0	0/0
Horizon 2020		42,837/1,689,823	25,772/1,016,655	30,162/1,189,821	32,388/1,277,624	11,522/454,521
Horizon Evrope		0/0	0/0	0/0	691/27,266	5783/228109
Institutional R&D funding		18,748/739,581	21,202/836,387	41,905/1,653,067	59,706/2,355,285	49,483/1,951,990
IP – Czech/China cooperation		80/3,156	0/0	0/0	0/0	0/0
IP Interantional cooperation		14,154/558,339	16,114/635,670	19,892/784,681	15,332/604,793	19,870/783,839
Programme COST		709/27,974	2,000/78,899	2,897/114,280	2,885/113,807	676/26,667
Programme ERC-CZ		0/0	5183/204,458	8,719/343,945	4,024/158,738	0/0
Programme Interreg		0/0	41/1,604	0/0	4,434/174,912	0/0
Programme GA ČR		37,721/1,487,990	42,966/1,694,907	48,764/1,923,635	54,068/2,132,846	56,437/2,226,293
Programme MMR ČR		0/0	0/0	170/6,723	456/18,002	0/0
Programme MPO ČR		0/0	0/0	0/0	0/0	112/4,404
Programme MV ČR		0/0	187/7,362	184/7,266	2,497/98,501	2,467/97,336
Programme TA ČR		11,252/443,855	9,290/366,467	10,436/411,673	10,426/411,281	10,849/427,963
Any other programme outside EU (VaV)		0/0	0/0	0/0	99/3,909	251/9,882
Mobility of scientific personnel		102/4,024	0/0	105/4,133	0/0	100/3,945

²⁵ If the provider is from abroad, please indicate the provider's country of origin in brackets. For the determination of the country of origin of the provider, the place of residence of the provider is decisive.

²⁶ Indicate the total amount expressed in thousands of CZK and the conversion of the total amount into Euro.

Specific research		6,423/253,379	7,076/279,121	7,993/315,306	8,617/339,915	9,663/381,165
Large infrastructure programme		26,843/1,058,895	55,995/2,208,876	54,029/2,131,321	55,557/2,191,598	61,950/2,443,787
Programme INTER EXCELLENCE		2,800/110,453	9,549/376,701	10,106/398,678	8,415/331,967	616/24,319
Total		161,978/6,389,655	195,528/7,713,149	235,363/9,284,531	259,595/10,240,444	229,778/9,064,219
In the role of another participant						
Provider ²⁷	Project name	Support (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
Horizon 2020		4848/19,1258	9,502/374,840	28,215/1,113,001	37,676/1,486,242	28,617/1,128,895
Horizon Evropa		0/0	0/0	0/0	0/0	7718/304,460
National sustainability programme		77,961/3,075,385	73,445/2,897,250	0/0	0/0	0/0
Programme Interreg		0/0	369/14,544	2,762/108,942	3,285/129,574	0/0
Programme EU - JU KDT		0/0	0/0	0/0	0/0	664/26,189
Programme GA ČR		3,212/126,701	1,495/58,974	3,875/152,868	3,978/156,931	5,412/213,499
Programme MPO ČR		19,733/778,426	15,203/599,718	10,835/427,423	3,090/121,899	0/0
Programme MV ČR		248/9,779	496/19,554	3,307/130,444	3,118/123,004	2,874/113,391
Programme MZdr ČR		5.173/204,063	6,622/261,223	5,372/211,913	4,165/164,287	3,281/129,428
Programme MZe ČR		927/36,568	852/33,597	673/26,548	598/23,590	0/0
Programme TA ČR		37,308/1,471,718	30,134/1,188,700	28,055/1,106,723	20,165/795,474	55,517/2,190,003
Programme international other- EU		0/0	0/0	0/0	0/0	437/17,237
Mobility programme		35/1,374	0/0	0/0	0/0	0/0
Large infrastructure programme		548/21,608	1301/51,306	759/29,929	929/36,666	1,408/55,538

²⁷ Ibid.

Total		149,993/5,916,879	139,418/5,499,706	83,852/3,307,792	77,005/3,037,667	105,927/4,178,576

Table 3.3.2 - Contract research activities

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
3S Sedlak, s.r.o.	Syntesis	400/15779	0/0	0/0	0/0	0/0
A.B. Nalbandyan Institute	research contr.	0/0	0/0	0/0	0/0	25/1005
A123 Systems s.r.o.	research contr.	0/0	0/0	0/0	400/15776	12/473
Aalborg University	Syntesis	0/0	0/0	0/0	0/0	260/10250
ABB s.r.o.	CT plastic	47/1840	29/1132	86/3396	1270/50095	39/1550
AbCheck s.r.o.	microCT	30/1177	0/0	0/0	0/0	0/0
Activair s.r.o.	data interpret.	0/0	582/22972	710/28020	0/0	0/0
Ademco CZ s.r.o.	research contr.	0/0	0/0	29/1132	0/0	0/0
ADITEG s.r.o.	microCT	54/2130	0/0	0/0	0/0	0/0
AGROSTROJ Pelhřimov, a.s.	microCT	0/0	0/0	0/0	0/0	40/1564
ALBENA, s.r.o.	Syntesis	0/0	41/1617	22/868	0/0	0/0
ALEMA Lanškroun s.r.o.	research contr.	0/0	0/0	0/0	36/1407	0/0
ALPS Electric Czech, s.r.o.	microCT	0/0	0/0	0/0	707/27870	3618/142727
ALUCAST	Syntesis	0/0	0/0	0/0	27/1065	126/4970
Antistat GmbH	Syntesis	0/0	0/0	0/0	0/0	95/3729
Astotec Automotive	research contr.	45/1775	34/1357	139/5499	0/0	97/3823
Astronomický ústav AV ČR, v.v.i	glass study	0/0	0/0	49/1941	0/0	0/0
Atlas Copco Services s.r.o.	research contr.	90/3536	0/0	5/213	77/3032	0/0
AVL List GmbH	TEM work	0/0	0/0	0/0	56/2217	0/0
Bainbridge Bio Ltd	TEM work	0/0	0/0	0/0	0/0	64/2505
BAUMÜLLER BRNO,s.r.o.	Syntesis	0/0	103/4064	28/1118	0/0	0/0
BCS Automotive Interface	research contr.	93/3669	57/2264	310/12227	94/3692	12/473
BD SENSORS s.r.o.	research contr.	45/1775	21/823	246/9704	53/2105	205/8085
Best - Business,a.s.	Syntesis	0/0	0/0	0/0	400/15798	0/0
Biofyzikální ústav AV ČR, v.v.i.	CT plastic	0/0	96/3787	39/1546	126/4967	0/0
Bodycote HT s.r.o.	research contr.	0/0	41/1602	0/0	14/568	9/347
Boehlerit GmbH & Co. KG	microCT	0/0	0/0	0/0	0/0	91/3597
Bosch Powertrain s.r.o.	microCT	0/0	0/0	54/2118	0/0	0/0
BOUKAL s.r.o.	Syntesis	0/0	34/1349	0/0	0/0	0/0
BRANO a.s.	research contr.	81/3195	61/2422	0/0	52/2065	0/0

²⁸ If the client is from abroad, indicate in brackets the country of origin of the client.

Brose CZ spol. s r.o.	research contr.	255/10067	231/9104	153/6025	322/12718	5/197
BSL Industrie a.s.	microCT	0/0	0/0	0/0	31/1223	15/590
C.S.O., spol. s r.o.	microCT	65/2564	0/0	0/0	0/0	0/0
CactuX s.r.o.	Syntesis	0/0	0/0	0/0	0/0	30/1183
Carclo Technical Plastics - Brno, s	Syntesis	86/3399	0/0	0/0	0/0	0/0
CEDRIG, z.s.	research contr.	30/1183	43/1712	0/0	0/0	0/0
Comberry LLC.	glass study	387/15255	167/6571	0/0	0/0	0/0
COMPEX, spol. s r.o.	polymer study	17/678	0/0	0/0	0/0	0/0
CONFORMITY s.r.o.	research contr.	0/0	55/2170	0/0	0/0	167/6596
Cooper-Standard Automotive	microCT	115/4527	58/2282	175/6912	55/2175	0/0
CoorsTek Advanced Materials	TEM work	75/2959	75/2959	85/3353	71/2801	145/5720
CORMEN s.r.o.	research contr.	330/13018	0/0	0/0	0/0	0/0
CROMTRYCK s.r.o.	Syntesis	35/1377	0/0	0/0	0/0	0/0
Česká zbrojovka a.s.	research contr.	53/2071	66/2588	164/6461	116/4559	407/16055
České vysoké učení technické	research contr.	0/0	16/647	30/1164	0/0	66/2588
Český metrologický institut	Syntesis	337/13288	252/9934	110/4327	146/5740	16/631
ČEZ, a. s.	CT plastic	152/6007	374/14767	117/4602	0/0	0/0
Daido Metal Co., Ltd. - org slož	microCT	11/444	58/2288	0/0	0/0	58/2279
DENSO MANUFACTURING CZECH s.r.o.	research contr.	0/0	1073/42334	1277/50360	136/5361	36/1420
DSSI International LLC	research contr.	0/0	0/0	0/0	0/0	31/1214
DURA Automotive CZ, k.s.	Syntesis	0/0	0/0	0/0	229/9034	138/5436
Dura Automotive Systems CZ, s.r.o.	Syntesis	0/0	0/0	72/2830	-72/-2830	0/0
DURA Automotive Systems GmbH	research contr.	0/0	0/0	86/3374	0/0	0/0
EDWARDS HIGH VACUUM	research contr.	943/37184	0/0	0/0	0/0	0/0
Edwards, s.r.o.	research contr.	129/5095	0/0	0/0	185/7295	473/18664
ELEKTROKOV,a.s.ZNOJMO	research contr.	0/0	0/0	35/1381	0/0	0/0
ELTE Eötvös Loránd	Syntesis	0/0	0/0	0/0	0/0	64/2521
EV Group E.Thallner GmbH	microCT	0/0	0/0	0/0	0/0	287/11305
Evicomagnetics GmbH	TEM work	31/1209	0/0	0/0	0/0	0/0
Fakultní nemocnice	research contr.	0/0	0/0	0/0	0/0	52/2051
Fakultní nemocnice Brno	TEM work	0/0	83/3260	318/12525	109/4280	0/0
Fatra, a.s.	Syntesis	99/3905	49/1933	110/4339	148/5826	0/0
FEI EUROPE B.V.	microCT	0/0	67/2651	0/0	0/0	0/0

Fibertex Nonwovens, a.s.	research contr.	0/0	0/0	91/3576	0/0	0/0
Fluid Engineering a.s.	Syntesis	0/0	59/2343	177/6997	0/0	0/0
FOREZ s.r.o.	microCT	49/1923	0/0	37/1456	95/3728	0/0
FORMAT 1 spol. s r.o.	data interpret.	95/3748	0/0	0/0	0/0	0/0
FOTEC Forschungs- und	research contr.	0/0	0/0	0/0	0/0	153/6031
Frentech Aerospace s.r.o.	microCT	718/28340	1284/50667	130/5118	742/29284	375/14781
Futaba Czech, s.r.o.	research contr.	72/2858	0/0	0/0	0/0	0/0
Fyzikální ústav AV ČR, v.v.i.	research contr.	66/2604	138/5434	0/0	2/81	0/0
Garrett Motion	microCT	1164/45929	1772/69902	1485/58579	1385/54640	2186/86226
Gates Polska Sp. z o.o.	Syntesis	0/0	0/0	247/9726	71/2813	0/0
GDP KORAL, s.r.o.	research contr.	0/0	153/6036	0/0	25/986	0/0
Genis Hf	research contr.	0/0	0/0	0/0	0/0	92/3635
GUMOTEX Automotive Břeclav, s.r.o.	glass study	0/0	0/0	0/0	27/1071	0/0
GZ Media, a.s.	polymer study	0/0	39/1538	0/0	13/505	0/0
Haberkorn s.r.o.	research contr.	0/0	0/0	0/0	0/0	115/4544
HAJDIK a.s.	Syntesis	13/503	0/0	30/1168	0/0	0/0
Hanon Systems Autopal	microCT	991/39089	994/39212	2619/103332	2735/107906	3623/142909
Hanon Systems Autopal s.r.o.	microCT	1378/54352	3231/127447	705/27819	1207/47628	846/33373
Hanon Systems Slovakia s.r.o.	research contr.	38/1500	37/1473	128/5032	122/4814	0/0
Hanon Systems Thermal	TEM work	0/0	0/0	0/0	0/0	470/18525
HARRYSON CONSULTING GROUP GmbH.	Syntesis	0/0	252/9931	0/0	0/0	0/0
Heat Transfer Systems s.r.o.	microCT	0/0	0/0	0/0	0/0	30/1183
HELLA AUTOTECHNIK NOVA, s.r.o.	research contr.	176/6960	206/8117	29/1132	204/8058	95/3748
Hitachi Energy	research contr.	0/0	308/12142	64/2530	13/497	71/2797
Home pond s.r.o.	Syntesis	0/0	0/0	500/19723	0/0	0/0
Honeywell International s.r.o.	microCT	280/11036	0/0	225/8892	0/0	0/0
Honeywell, spol. s r.o.	data interpret.	3/134	1170/46151	0/0	0/0	0/0
Chengdu Broadwell	microCT	0/0	0/0	0/0	54/2135	0/0
IDSC, spol. s r.o.	microCT	0/0	44/1752	0/0	0/0	0/0
IFE-CR,a.s.	Syntesis	0/0	0/0	65/2564	0/0	0/0
iKNOW-WHO GmbH	research contr.	0/0	0/0	515/20308	0/0	0/0
ILEXYS B.V.	microCT	41/1624	0/0	0/0	0/0	0/0
IMI International s.r.o.	microCT	0/0	26/1018	25/977	10/385	154/6087
Impact Innovations GmbH.	Syntesis	0/0	12/473	60/2367	0/0	0/0
IMS Nanofabrication GmbH	Syntesis	0/0	0/0	0/0	0/0	273/10766

IonBond Czechia, s.r.o.	research contr.	0/0	0/0	0/0	83/3291	0/0
ITW PRONOVIA, s.r.o.	glass study	34/1331	0/0	10/388	138/5437	106/4181
Jitřenka Bučovice z.s.	research contr.	326/12878	281/11084	0/0	0/0	0/0
John Crane a.s.	Syntesis	0/0	177/6964	0/0	0/0	0/0
Josef Škrkoň - Techplast, a.s.	microCT	162/6391	434/17126	131/5169	372/14666	0/0
JTEKT Bearings	microCT	43/1694	12/458	39/1527	59/2310	25/992
Karolinska Institutet	Syntesis	0/0	77/3030	0/0	226/8907	0/0
Kendrion (Prostějov) s.r.o.	microCT	19/740	0/0	12/485	32/1243	0/0
Kentigen s.r.o.	research contr.	0/0	0/0	79/3115	0/0	0/0
Knorr-Bremse GmbH	Syntesis	148/5824	0/0	161/6361	0/0	0/0
KOH-I-NOOR RONAS s.r.o.	CT plastic	30/1183	45/1779	0/0	0/0	0/0
Kompetenzzentrum Holz GmbH	data interpret.	0/0	38/1510	0/0	0/0	0/0
Kooperativa pojišťovna, a.s.,	research contr.	0/0	0/0	56/2218	244/9615	59/2343
KORBIČKA ŠPERKY s.r.o.	microCT	0/0	390/15385	0/0	0/0	0/0
KOVO Koukola, s.r.o.	microCT	0/0	0/0	0/0	0/0	70/2761
KOVOLIT, a.s.	Syntesis	62/2435	0/0	26/1011	0/0	28/1105
KSM Castings CZ s.r.o.	research contr.	169/6657	94/3720	0/0	94/3712	80/3156
KSR Industrial, s.r.o.	microCT	0/0	0/0	0/0	0/0	101/3994
KYOCERA AVX Components s.r.o.	microCT	80/3156	22/884	0/0	0/0	0/0
L.K. Engineering, s.r.o.	Syntesis	0/0	0/0	0/0	191/7532	125/4927
Lam Research Corporation	research contr.	0/0	0/0	17/653	139/5495	81/3179
Lear Corporation Czech Republic s.r	research contr.	210/8284	181/7143	162/6397	0/0	18/710
Lear Corporation Engineering	research contr.	70/2750	0/0	10/388	23/888	45/1775
Letoplast s.r.o	glass study	339/13354	0/0	0/0	0/0	0/0
LG Electronics Inc. Moscow	polymer study	53/2094	0/0	0/0	0/0	0/0
Liebnitz-Institut für Plasmaforschung	research contr.	0/0	0/0	0/0	78/3068	0/0
Lightigo s.r.o.	microCT	0/0	600/23669	225/8876	150/5917	0/0
Linamar Structures Czechia s.r.o.	microCT	0/0	0/0	0/0	0/0	40/1578
LTR s.r.o.	Syntesis	0/0	360/14201	720/28402	1080/42604	1080/42604
M & V, spol. s r.o.	microCT	0/0	0/0	0/0	97/3823	0/0
MAG 45 s.r.o.	research contr.	0/0	0/0	0/0	54/2142	0/0
Magna Lighting Czech s.r.o.	research contr.	5/213	0/0	66/2588	0/0	31/1233
MANN + HUMMEL (CZ) v.o.s.	CT plastic	307/12127	56/2200	93/3655	187/7393	50/1972

MANN + HUMMEL Service s.r.o.	microCT	225/8878	46/1811	0/0	8/305	279/11006
Marelli Automotive Lighting	research contr.	0/0	0/0	0/0	0/0	120/4734
Marmon Foodservice	microCT	0/0	0/0	0/0	72/2843	56/2201
Masarykova univerzita	microCT	97/3826	113/4459	140/5511	84/3310	106/4170
Mast-Jaegermeister CZ s.r.o.	Syntesis	0/0	0/0	54/2130	0/0	0/0
Max-Planck Institute	research contr.	0/0	0/0	0/0	59/2324	0/0
	research contr.	0/0	0/0	0/0	0/0	114/4496
MCAE Systems, s.r.o.	microCT	0/0	0/0	75/2976	271/10671	20/789
MEDICEM Institute s.r.o.	microCT	92/3634	0/0	0/0	0/0	0/0
Medizinische Universität Wien	Syntesis	0/0	0/0	145/5735	0/0	0/0
Mejzlik Propellers s.r.o.	Syntesis	0/0	0/0	0/0	0/0	216/8521
Mendelova univerzita v Brně	research contr.	0/0	72/2840	0/0	0/0	0/0
Měřicí technika Morava s.r.o.	research contr.	125/4930	0/0	0/0	0/0	0/0
Metaldyne Oslavany, spol. s r.o.	polymer study	34/1352	38/1493	149/5862	38/1518	0/0
MICRORISC s.r.o.	TEM work	0/0	0/0	0/0	0/0	623/24583
Micro-Swiss Ltd.	Syntesis	0/0	0/0	0/0	67/2628	0/0
Mlýny J. Voženílek, spol. s r.o.	microCT	0/0	0/0	0/0	499/19684	0/0
MND a.s.	research contr.	0/0	0/0	116/4595	0/0	0/0
Montanuniversität Leoben	Syntesis	17/654	0/0	0/0	0/0	41/1635
MP DIMS a.s.	CT plastic	0/0	0/0	29/1156	0/0	0/0
NanoComplex s.r.o.	data interpret.	60/2367	0/0	0/0	0/0	0/0
NovaTech Cz s.r.o.	microCT	266/10473	239/9445	164/6469	0/0	108/4260
OLSA POLAND Sp. z o. o.	research contr.	0/0	0/0	0/0	0/0	51/2013
Olympus Medical Products	research contr.	0/0	37/1456	78/3073	14/533	0/0
ON SEMICONDUCTOR CZECH	microCT	500/19724	300/11834	475/18738	400/15779	400/15779
Opto Biosystems LTD	Syntesis	0/0	0/0	0/0	0/0	44/1728
ORLEN Unipetrol RPA s.r.o.	Syntesis	54/2130	0/0	0/0	0/0	0/0
Panasonic Automotive Systems	research contr.	0/0	0/0	3265/128804	0/0	0/0
PARDAM NANO4FIBERS s.r.o.	research contr.	0/0	0/0	0/0	78/3082	82/3249
PEGATRON Czech s. r. o.	research contr.	0/0	0/0	26/1011	28/1109	63/2465
Plastikářský klastr	research contr.	1345/53057	0/0	280/11045	0/0	0/0
PO LIGHTING CZECH s.r.o.	Syntesis	94/3698	320/12615	226/8921	14/533	10/394

Poppe + Potthoff s.r.o.	microCT	25/974	0/0	131/5180	11/447	47/1846
Povodí Vltavy, státní podnik	TEM work	44/1746	0/0	0/0	0/0	0/0
První brněnská strojírna	TEM work	0/0	22/869	48/1907	0/0	81/3204
PULS investiční s.r.o.	Syntesis	0/0	0/0	144/5693	41/1633	44/1736
Rauschert, k.s.	microCT	0/0	0/0	0/0	1400/55227	350/13807
RENOMAG spol. s r.o.	research contr.	0/0	0/0	49/1916	0/0	0/0
Rieter CZ s.r.o.	research contr.	29/1158	0/0	0/0	0/0	0/0
Robert Bosch, spol. s r.o.	Syntesis	0/0	112/4399	0/0	0/0	0/0
Rohde & Schwarz GmbH & Co.KG	CT plastic	0/0	0/0	0/0	0/0	132/5218
Röchling Industrial Tábor s.r.o.	microCT	0/0	0/0	139/5487	32/1267	554/21848
S.A.B. Aerospace s.r.o.	research contr.	0/0	6/225	131/5175	0/0	12/473
S.A.M. - metalizační	microCT	0/0	192/7587	0/0	63/2481	0/0
SAB Launch Services srl	microCT	0/0	0/0	0/0	0/0	90/3552
Saint-Gobain Construction	research contr.	0/0	0/0	0/0	152/5998	58/2288
SAND TEAM, spol. s r.o.	research contr.	58/2268	0/0	0/0	0/0	0/0
Sanmina-SCI	microCT	99/3915	0/0	0/0	0/0	0/0
Saurer Czech s.r.o.	Syntesis	0/0	91/3591	95/3752	54/2130	0/0
SEEIF Ceramic, a.s.	Syntesis	253/9975	0/0	0/0	0/0	0/0
Senior Flexonics Czech s.r.o.	research contr.	0/0	0/0	49/1920	0/0	0/0
Schaeffler Production CZ s.r.o.	research contr.	0/0	26/1035	89/3493	0/0	0/0
SCHOTT CR, s.r.o.	research contr.	15/592	16/647	61/2414	0/0	0/0
SIGMA GROUP a.s.	polymer study	0/0	0/0	0/0	0/0	33/1282
SIIX EMS Slovakia s.r.o.	research contr.	0/0	0/0	12/491	26/1033	18/716
Sobriety s.r.o.	microCT	66/2604	71/2807	0/0	0/0	0/0
Songwon Industrial Co., Ltd.	TEM work	0/0	88/3471	0/0	0/0	0/0
SPECTRA spol. s r.o.	research contr.	0/0	0/0	0/0	55/2162	0/0
Spektroskopická společnost	TEM work	299/11802	0/0	0/0	0/0	0/0
Strojírny Bohdalice, a.s.	research contr.	0/0	0/0	0/0	9/339	30/1183
STV GROUP a.s.	research contr.	0/0	0/0	46/1811	0/0	0/0
Süddeutsche	Syntesis	0/0	0/0	0/0	0/0	195/7692
SUPPLY SERVIS s.r.o.	CT plastic	0/0	0/0	16/647	0/0	55/2170
SVCS Process Innovation s.r.o.	microCT	0/0	0/0	63/2497	0/0	0/0
Swoboda - Stamping, s.r.o.	research contr.	0/0	0/0	128/5065	0/0	0/0
Synthesia, a.s.	microCT	0/0	63/2485	0/0	0/0	0/0
ŠKODA AUTO a.s.	Syntesis	217/8572	100/3945	0/0	0/0	0/0

ŠKO-ENERGO, s.r.o.	research contr.	0/0	0/0	38/1484	0/0	0/0
Šroubárna Kyjov, spol. s r.o.	research contr.	0/0	39/1543	47/1870	0/0	0/0
TART, s. r. o.	microCT	0/0	245/9665	0/0	0/0	0/0
TE Connectivity Czech s.r.o.	Syntesis	52/2059	0/0	0/0	0/0	45/1779
Technická univerzita v Liberci	research contr.	360/14205	15/583	118/4641	230/9076	90/3535
Technické muzeum v Brně	research contr.	0/0	0/0	0/0	18/715	29/1132
Technische Universität Wien	glass study	0/0	34/1355	0/0	0/0	0/0
Tenneco Automotive	polymer study	892/35194	410/16169	779/30725	374/14745	134/5303
Thermo Fisher Scientific	Syntesis	67/2630	45/1771	185/7291	485/19133	1735/68435
THK RHYTHM AUTOMOTIVE	microCT	90/3550	0/0	10/388	0/0	0/0
thyssenkrupp Dynamic Components	microCT	0/0	0/0	0/0	0/0	51/2007
TMC CR, s.r.o.	TEM work	0/0	0/0	0/0	400/15778	250/9870
TNO – Inovation for Life	research contr.	0/0	57/2230	0/0	0/0	0/0
TOMATEX Otrokovice, a.s.	TEM work	72/2840	0/0	9/355	0/0	0/0
Toray Textiles Central Europe s.r.o	Syntesis	24/947	0/0	13/493	17/651	41/1617
Toyota Motor Manufacturing	microCT	0/0	0/0	0/0	0/0	82/3235
TTS energo s.r.o.	Syntesis	0/0	0/0	30/1195	0/0	0/0
TTS, s.r.o.	CT plastic	0/0	0/0	0/0	33/1292	0/0
U.S.Steel Košice, s.r.o.	data interpret.	53/2083	36/1428	85/3361	86/3408	97/3834
UFI FILTERS Czech, s.r.o.	research contr.	122/4808	37/1456	208/8208	313/12335	313/12327
ÚJV Řež, a. s.	microCT	0/0	0/0	0/0	63/2485	55/2170
University of Colorado Anschutz	microCT	0/0	0/0	312/12293	0/0	0/0
Univerzita Karlova	Syntesis	15/592	84/3321	146/5740	158/6236	13/521
Univerzita Tomáše Bati ve Zlíně	research contr.	39/1548	0/0	0/0	22/852	234/9237
Ústav anorganické chemie	microCT	0/0	67/2650	0/0	0/0	0/0
Ústav aplikované mechaniky	microCT	66/2604	115/4529	49/1941	0/0	0/0
Ústav fyziky materiálů AV ČR, v.v.i	Syntesis	13/493	39/1553	59/2329	0/0	0/0
VACUUMSCHMELZE, s.r.o.	glass study	202/7974	17/658	4/161	4/177	0/0
VALEO AUTOKLIMATIZACE k.s.	polymer study	0/0	0/0	21/809	0/0	885/34892
VIA ALTA a.s.	research contr.	0/0	151/5943	114/4513	0/0	0/0

Vibracoustic CZ, s.r.o.	Syntesis	67/2643	95/3752	13/518	0/0	0/0
VIEGA s.r.o.	microCT	0/0	0/0	0/0	0/0	58/2272
ViskoTeepak, s.r.o.	microCT	52/2051	0/0	0/0	0/0	0/0
Vitesco Technologies	TEM work	125/4921	0/0	0/0	29/1136	53/2103
Vysoká škola chemicko-technologická	research contr.	0/0	0/0	0/0	34/1345	103/4079
way4life s.r.o.	TEM work	0/0	0/0	0/0	0/0	26/1006
WellU Swiss Group GmbH	Syntesis	102/4011	0/0	153/6017	236/9291	0/0
Wikinomist s.r.o.	research contr.	0/0	0/0	0/0	0/0	243/9566
X_DSSI International, LLC	Syntesis	0/0	0/0	0/0	67/2660	0/0
X_Meopta – optika, s.r.o.	microCT	211/8307	83/3266	76/2993	31/1215	40/1593
X_Trenčianska univerzita Alexandra	data interpret.	129/5084	54/2149	0/0	0/0	0/0
X_Univerzita Pardubice	microCT	0/0	0/0	0/0	0/0	185/7290
X_zablokovat	microCT	509/20072	477/18816	722/28482	349/13767	59/2316
Xandor Automotive CZ s.r.o.	Syntesis	0/0	0/0	121/4787	0/0	0/0
Zentiva, k.s.	research contr.	211/8304	0/0	0/0	0/0	30/1188
ZF Engineering Plzeň s.r.o.	microCT	49/1923	0/0	0/0	0/0	0/0
ZF Passive Safety Czech s.r.o.	microCT	347/13704	261/10286	29/1132	212/8379	4/158
ZLIN AIRCRAFT a.s.	Syntesis	57/2237	48/1886	0/0	0/0	0/0
ŽĐAS, a.s.	research contr.	0/0	54/2114	0/0	0/0	0/0
ŽDB DRÁTOVNA a.s.	research contr.	0/0	36/1425	0/0	0/0	0/0
Total		19,445/ 767,073	21,057/ 830,654	23,362/ 921,563	21,640/ 853,635	26,441/ 1,043,056

Note: List and describe contract research activities with a revenue in a given calendar year, regardless of the amount of financial revenue.

3.4 Research results with existing or prospective impact on society

The evaluated unit shall briefly comment on a maximum of 10 (considered most significant by the evaluated unit) research results already applied or realistically heading towards application during the period of 2019–2023, based on the overview annex table 3.4.1 (it is recommended to indicate results with a link to projects listed in indicator 3.3). The evaluated unit must demonstrate in its description that the research results have led or will soon lead to positive impacts²⁹, on society (e.g. description of how the results are used by various users, the range of persons/institutions for which the result is relevant, measurable economic impacts, etc.). The evaluated entity shall indicate in its commentary whether the gender dimension is considered in these results and discuss the impacts of the results regarding sustainability.

Maximum range 300 words/result.

Self-assessment:

Note: The gender dimension and sustainability are integral to all CEITEC activities and are embedded within our HR Award framework and internal career development policies. These principles guide both our strategic direction and day-to-day operations. Given their cross-cutting nature, we consider them foundational rather than stand-alone elements. As such, we do not address them separately for each individual project outcome, as this would result in unnecessary repetition. Instead, we ensure they are systematically and consistently applied across all initiative.

1. **Start up and spin off companies:** One of the most significant examples of societal impacts of research is the creation of startups. CEITEC BUT has successfully established six startups and spin-offs during the measured period, including Cactux, Linacton, Tricera, and Lightigo, along with two independent subsidiaries: Lightigo Space and Lightigo Development. Further details on these ventures are summarized in the next chapter: 3.5 Transfer of Results into Practice. This is also a prime example of results leading to sustainability.
2. **Atomic hydrogen source for SEM, working sample, 2021:** The result is a prime example of the synergy development of the original hardware developed at BUT (atomic beam source and control unit, originally funded by the TA CR programme) with the methodology of using the atomic source in a scanning electron microscope (SEM), developed through the joint effort of BUT and Thermo Fisher Scientific (TFS). Currently, SEMs utilize electron, ion and plasma sources. Atomic sources (here Hydrogen, in particular) are complementary to plasma sources and can perform chemical reactions unreachable for plasma sources. While plasma sources are routinely used for sample cleaning in SEMs, they cannot be used in the semiconductor segment. The developed methodology allows to perform reduction reactions (counter reactions to oxidation) and thus opens new possibilities in SEM sample preparation for the semiconductor industry. The methodology was verified by demonstrating redox reactions inside SEMs. The technology has already gained attention from TFS customers as well as other stakeholders and will soon be offered on commercial basis by TFS. Overall, the technology has the potential for a significant worldwide impact due to the clearly defined distribution channels of one of the major global SEM suppliers (TFS). Because of the above potential, the technology has become an absolute winner of the Technology Agency of Czech Republic awards in 2021. After winning the award in the Bussiness category, the absolute award was granted based on internet poll. <https://www.ceitec.eu/ceitec-researchers-awarded-for-developing-an-atomic-source-for-applications-in-electron-microscopy/t10875>

²⁹ See Terms definition.

3. **Orpheus-AC3, reconnaissance CBRN military robot, 2019:** 40 pieces of the robot were made for the Czech Army – by LTR, spin-off BUT, in cooperation with BUT (CEITEC, FEKT). The robots are involved in active armament of the Army of the Czech Republic and routinely used for CBRN threats analysis (Chemical, Biological, Radiological, and Nuclear threats), including foreign NATO missions. <https://www.ceitec.eu/researchers-from-ceitec-but-tested-robot-orpheus/t9937>

4. **Injectable phosphate bone glue, utility model, 2023.** The results represent a breakthrough in traumatology by actively stimulating bone healing using cell-free, biodegradable adhesives. Unlike conventional mechanical fixation with non-degradable implants, this self-hardening material stabilizes fractures while gradually resorbing into non-toxic products, facilitating natural bone regeneration. Its applications extend beyond fracture treatment to bone fusion, cyst filling, and veterinary medicine, particularly in small animals like cats and dogs. The project is currently in preclinical trials on an ulna fracture animal model (sheep) under the Ministry of Health project No. NW24-08-00367, in collaboration with the University Hospital Brno (Departments of Trauma Surgery, Paediatric Surgery, Orthopaedics, and Traumatology) and the Veterinary Research Institute in Brno. The key innovation lies in its injectable, self-hardening bioceramic-polymer composite, which binds bone fragments together like a puzzle. It enables immediate full loading when combined with internal osteosynthesis, while gradually releasing calcium phosphate to stimulate bone healing. The adhesive is fully resorbed, leaving behind a healed bone ready for immediate rehabilitation. Beyond fractures, this glue has potential applications in arthrodesis, cranioplasty, orthopaedics, traumatology, neurosurgery, and dentistry. With an aging population and rising osteoporosis-related fractures, demand for effective fracture management is urgent. By 2025, fractures are expected to rise by 25% to 4.5 million cases. This biodegradable bone adhesive offers a promising medical and socio-economic solution, addressing limitations of traditional fixation methods in treating comminuted intra-articular fractures. We are currently in negotiation with an Islandian company Genis (genis.is), with interest to commercialize this product. <https://biomaterials.ceitec.cz/novinky/bone-glue-developed-by-ceitec-scientists-and-doctors-from-the-university-hospital-brno-can-be-used-for-complicated-fractures/>

5. **Single step total skin substitute, utility model, 2021.** The single-step total skin substitute introduces a functional skin graft capable of restoring mechanical and viscoelastic properties, significantly improving outcomes for critically burned patients. This innovation enhances survival rates without compromising quality of life, addressing the critical shortage of donor skin in patients with burns exceeding 60% TBSA (total body surface area). The product is currently in preclinical trials using a full-thickness skin substitute model on pigs under the Czech Ministry of Health project No. NU22-08-00454, in collaboration with the Clinic of Burns and Reconstructive Surgery at the University Hospital Brno and the Veterinary Research Institute in Brno. The key innovation lies in a 4th generation scaffold seeded with differentiated mesenchymal stem cells (MSCs), supported by stabilized growth factors within a three-layered structure mimicking natural skin (hypodermis, dermis, epidermis). The bioengineered skin graft exhibits precise biological activity in cGMP conditions and undergoes rigorous biotolerance and healing assessments in two phases: acute wound closure and three-month scar maturation. With modern advancements in burn treatment, survival rates have improved, but a shortage of donor sites remains a major limitation for patients with extensive burns. The current gold standard, autologous split-thickness skin grafts (STSGs), is not always feasible due to limited donor availability. Developing a total skin substitute through collaboration between tissue engineers, cell biologists, and surgeons offers

a transformative solution for full-thickness skin loss. This breakthrough not only enhances survival rates but also improves long-term quality of life for burn patients.

6. **Measurement system for temperature rise test, prototype, 2022.** Measurement system developed for ABB a.s. consists of two separate measuring sub-systems connected to a computer via an Ethernet bus, where each measuring sub-system enables temperature measurement using thermocouples on 100 channels. Both separate measurement subsystems can be used simultaneously within one measurement task (total number of channels 200). The entire system enables a possible future further expansion of the number of measured channels. The subsystems are able to work (measure) even when the evaluation PC fails. The measurement system also includes PC application software developed on the NI LabVIEW platform, which enables setting the measurement configuration (entering the measurement period, test specifications, setting the thermocouples used for measurement and thermocouples for measuring the ambient temperature), visualization and data export. The system is currently used by the industry (ABB) in their production-testing lines.

7. **Fail-Operational Control Algorithms for Electrical Drives, Software, 2019.** This software package provides advanced control algorithms for permanent magnet synchronous (PMS) motors, integrating fault compensation strategies to mitigate errors in the motor, control unit, software, sensors, and power electronics. Designed for multiphase electric motors, it is particularly suited for six-phase motors configured as two three-phase subsystems but can be adapted for three times three-phase motors as well. The control algorithms ensure continued motor operation in the event of electrical faults such as stator winding failure, sensor malfunction, or frequency converter power stage faults. They enable seamless switching between compensation strategies, minimizing operational disruptions. In the case of an inter-turn short circuit, the algorithm reduces short-circuit currents by applying field weakening to the damaged motor segment, making it suitable for motors with a field weakening index below one. Additionally, the system aims to minimize the impact of faults on the motor's maximum output power by dynamically adjusting control strategies. Fault detection is a key feature of the software, utilizing inverter power stage diagnostics (e.g., desaturation fault flags) or algorithm-based fault detection. The system can identify disconnected phases, short circuits (inter-turn, phase-to-phase, power transistor), and sensor failures (current, voltage, or position sensors). Developed in MATLAB/Simulink, the software incorporates StateFlow-based state machines to manage system initialization and operational transitions. From these models, C/C++ code can be generated for implementation in AURIX 2G microcontrollers. The software enhances drive reliability through redundancy, making it highly beneficial for semi-autonomous and autonomous vehicles, where critical component reliability is essential. While it does not provide direct cost savings for conventional drives, it offers a cost-effective alternative to using dual redundant drives in next-generation vehicle applications. This work resulted in sold license to ZF Friedrichshafen AG, totaling over 100,000 euros in 2019 and 2020. <https://autodrive.ceitec.cz/en/results/fail-operational-control-algorithms-of-electrical-drives/>

8. **Composite Cosmetic and Dermatological Product Based on Nanofibers and Submicron Fibers, Functional sample, utility model, 2019.** This result governs the utilization of research results from the joint project TJ02000329 with Pardam Nano4Fibres s.r.o. titled "Composite Cosmetic and Dermatological Product Based on Nanofibers and Submicron Fibers", supported by the Technology Agency of the Czech Republic. The project generated several applied outcomes, including:

- A functional sample of a cosmetic fiber carrier for skin nourishment and irritation relief.
- A functional sample of a dermatological fiber carrier for inflammatory skin conditions.
- A utility model protecting the preparation procedures for the final cosmetic and dermatological product.
- A verified technology for producing fiber carriers for cosmetic and dermatological use.

The above were licenced to company Pardam Nano4Fibres which utilize it in its skin treatment products.

https://www.nanoasociace.cz/en/ceitec-makes-nanofibers-by-centrifugal-forces-in-brno/page/40/?et_blog

Further to the examples above, CEITEC research significantly contributes to society in its research capacity, exemplified for example by the Laboratory of Laser Spectroscopy within the RG1-6 group: Advanced Instrumentation and Methods for Materials Characterization. This group conducts both fundamental and applied research, with a strong focus on biology, where its impact is especially promising. A key area of their work involves developing spectroscopic methods for immunoassay readout and elemental imaging of clinical and biological samples. Notably, they introduced Laser-Induced Breakdown Spectroscopy (LIBS) as an alternative to fluorescence microscopy and upconversion scanners, offering multielemental analysis without the need for fluorescence-based nanoparticles. Another example is group of Prof. R. Chmelik who has made significant contributions in advanced light microscopy, particularly in holographic and two-photon microscopy, with applications in in vivo cell biology and cancer research which significantly contributed to establishment of a start-up company Telight s.r.o. prior to the measured period. Similarly, Prof. E. Glowacki has advanced research on implantable neuroprosthetic devices, which hold great potential for nerve control and treatment. These innovations underscore CEITEC's long term commitment to scientific progress and real-world societal impact.

Table 3.4.1 - Overview of research results in the period under evaluation

Type of result ³⁰	Year of application	Name
Patent	2020	EP3673305A1 Add-on imaging module for off-axis recording of polarization coded waves The patent streamlines traditional holographic setups while unlocking new application areas, such as the holographic measurement of optically anisotropic specimens.
Patent	2022	Application number 2021-290 A scanning probe with a hollow optical fibre (RG-1-03 6,39%, RG-1-04 41,35%) The patent brings innovation in the use of a hollow optical fiber not only for collecting the light signal from the tip of the scanning microscope, but also enables working media to be fed to the tip.
Utility model	2021	Bioresorbable hybrid spine scaffold for intervertebral fusion
Utility Model	2023	Antibacterial phosphate bone cement. CZ 37081 U1.
Software	2019	Multiphase machines control library SW solution for control of multiphase machines for fail-operational drives in e-vehicles. Licensed to automotive industry

³⁰ Specify the specific type of result. Add rows as needed.

Prototype / commercial product	2019	Orpheus-AC3, reconnaissance CBRN military robot , 40 pcs made for the Czech Army – by LTR, spin-off BUT, in cooperation with BUT (CEITEC, FEKT). The robots are involved in active armament of the Czech Army and routinely used, including foreign NATO missions.
Patent	2023	Parameterizable merging unit for sensor-based measurement, and method to operate such unit. The invention relates to a parameterizable merging unit for sensor-based measurement of current and voltage in high voltage networks or electrical grids operating with other voltage levels.
Prototype	2022	Measurement system for temperature rise tests The measurement system consists of two separate measuring sub-systems connected to a computer via an Ethernet bus, where each measuring sub-system enables temperature measurement using thermocouples on 100 channels. Licenced to ABB.

Note 1: Please list and describe the results already applied in practice or heading towards application in practice with existing or prospective impact on the society (e.g. domestic or foreign patents, sold licenses, spin-offs, prototypes, varieties and breeds, methodologies, significant analyses, surveys, expert outputs for policymaking or other forms of non-publication outputs, etc.). Indirect results of research, development and creative activities with documented societal impact, e.g. expert activities, services to the public/government/scientific community, may also be reported.

TRANSFER OF RESULTS INTO PRACTICE

3.5 Transfer of results into practice

The evaluated unit shall briefly describe its system for transferring results into practice. It shall also indicate up to five of the most typical users of its results, whether in the university environment or in the non-university application/corporate sphere, detailing how it collaborates with them and how it seeks out new users (using a maximum of five specific examples).

It will also indicate whether and how it commercialises R&D&I results (e.g. selling licences, setting up start-up or spin-off companies, etc.)³¹, providing brief description of the commercialisation methods used. The effectiveness of the transfer of results and the commercialisation of R&D&I results will be described using a selection of results (max. five) listed in annex table (Table 3.4.1).³²

Additionally, the evaluated unit shall briefly comment on the funds received during the period of 2019–2023 from non-public, non-grant sources (e.g. licences sold, spin-off revenues, donations, etc.). A full summary shall be provided in annex table (Table 3.5.1).

Maximum 500 words plus 200 words for each provided example of finding a new user of results and commercialization.

Self-assessment:

Technology Transfer and Commercialization at CEITEC

Although CEITEC was originally established as a basic research organization, it has successfully translated scientific discoveries into real-world applications through an emphasis on entrepreneurship and startup creation. To date, it has founded eight startup companies, six of which originated at CEITEC BUT.

Our strategic focus on spin-offs and start-ups is reflected in several key initiatives that actively support researchers in commercializing their ideas:

- CEITEC Innovation Accelerator Programme – Provides up to two years of paid leave (with €40,000 per participant annually) for students and employees to develop prototypes and business plans. <https://www.ceitec.eu/innovation-accelerator-programme/t11130>
- Director's Awards – Recognizes and funds the best entrepreneurial ideas with cash award.
- JRGL Project – Funded by the city of Brno with €1 million, supporting up to four junior research groups in transforming scientific innovations into commercial ventures. See more on <https://www.ceitec.eu/brno-city-council-projects-to-support-young-scientists-continue/t11135>.
- Employment of dedicated Industrial Liaison Officer (at the time of writing this report, the position is unoccupied).

A Strategic Approach to Commercialization: Prioritizing Spin-Offs Over Licensing

While CEITEC actively supports technology commercialization, patent licensing is not our primary focus—by design. Patents alone do not guarantee impact, and their commercialization requires substantial financial resources for protection, maintenance, and enforcement. For a publicly funded research institute, these costs must be carefully weighed against the likelihood of real-world application.

³¹ In the case of military HEIs, their specific position is taken into account when evaluating the commercialisation/evaluation of R&D&I results.

³² If the commercialisation of R&D&I results is carried out in this way.

Instead of focusing on licensing, we have deliberately chosen a more dynamic and scalable model based on three pillars:

1. **Spin-offs and start-ups** allow us to bring innovations to market faster, ensuring that cutting-edge research is directly implemented in industry.
2. **Industry collaborations and contractual research** provide a sustainable revenue stream while fostering long-term strategic partnerships.
3. **Know-how transfer and business partnerships** enable research outcomes to be integrated into commercial solutions without the constraints of traditional patent licensing.

As a result, while our licensing revenues remain relatively modest (typically amounting to several tens of thousands of euros annually, as shown in Table 3.5.1), we compensate for this through high-impact collaborations. Joint research projects with industry partners generate several million euros in turnover each year, demonstrating the real-world applicability of our research. Similarly, our contractual research has been steadily growing, exceeding €1 million in 2023 (Table 3.3.2).

Collaborating with Key Innovation Hubs

CEITEC maintains a strong partnership with the South Moravian Innovation Center (JIC), a leading national startup incubator supporting over 200 startups. Many of our initiatives—including the CEITEC Innovation Accelerator and Director’s Award—are developed in direct consultation with JIC’s professional advisors, many of whom are senior figures from the high-tech industry. This collaboration helps bridge the gap between academic research and market needs, ensuring that our startups and spin-offs have access to expertise, funding, and networking opportunities.

Conclusion: A Startup-Driven Technology Transfer Strategy

At CEITEC, our technology transfer strategy is driven by impact, not just intellectual property accumulation. By focusing on high-tech startup creation, industry collaborations, and entrepreneurial support, we ensure that our research leads to tangible, real-world applications. Rather than measuring success by the number of patents or licenses, we prioritize real-world adoption, ensuring that our research makes a meaningful contribution to society, industry, and the economy.

1. **CactuX s.r.o** In 2020, a team led by Professor Kaiser founded CactuX s.r.o., a startup dedicated to bringing CEITEC-developed CT instrumentation products to market. From its inception, the company has received support from CEITEC, including access to university facilities, guidance, and commercialization assistance. CactuX entered into a license agreement with the university for two prototypes, which have since been further developed and successfully commercialized.

Following its establishment, CactuX formed a strategic partnership with Rigaku Corporation, a leading global technology company. Under this collaboration, CactuX developed advanced software tools to enhance Rigaku’s product performance, with the entire development process driven by the partner’s needs. These tools have been integrated into Rigaku’s product portfolio, solidifying CactuX’s role as an innovator in the field. As part of the collaboration, CEITEC benefits from Rigaku’s latest technology, which is made available for research purposes. Additionally, Rigaku supports the mobility of CEITEC experts, enabling them to gain hands-on experience at their facilities. This mutually beneficial partnership showcases how cutting-edge research can successfully transition from the lab to the global market, reinforcing CEITEC’s commitment to technology transfer and industry collaboration.

2. **[Linacton s.r.o.](#)** Linacton s.r.o. is a CEITEC BUT startup (2021) specializing in high-energy X-ray computed tomography (CT) for industrial non-destructive testing (NDT). Built on over a decade of expertise in CT application and development at CEITEC BUT, Linacton addresses the limitations of conventional CT systems by enabling deep-penetration imaging for large and dense objects. With 10x better penetration depth, Linacton's advanced CT solutions cater to industries such as automotive, aerospace, energy, and advanced manufacturing, providing key applications in dimensional inspection, porosity evaluation, assembly verification, and 3D printing optimization. A notable example of its capabilities includes the 2022 collaboration with the Cincinnati Center, where Linacton performed a full 3D reconstruction of a Jetsurf motorized surfboard. Linacton is currently developing a state-of-the-art industrial CT center in Brno, Czech Republic, with a phased roadmap covering facility construction, radiation safety compliance, and the integration of an open-access workflow for industry-driven operations. As a spin-off of CEITEC BUT, Linacton benefits from cutting-edge research collaborations and intercooperating laboratories equipped with advanced X-ray radiographic and tomographic technology. By bridging academic research with industry needs, Linacton is poised to redefine industrial inspection standards, making high-energy CT technology widely accessible for precision quality control and innovation in modern manufacturing.

3. **[TriCera s.r.o.](#)** TriCera s.r.o. was established in 2021 as the BUT spin-off, specializing in ballistic protection against armor-piercing projectiles. Founded by CEITEC BUT scientists Martin Kachlík and Jakub Roleček, TriCera brings to market a unique ceramic-metal composite armor with no global competition. Unlike traditional armor solutions that rely on polymer or steel, TriCera's innovation combines non-porous ceramics with aluminum alloys, offering superior mechanical strength, fire resistance, and unlimited service life. Originally developed for military applications, the company faced challenges due to slowed defense innovation and shifted its focus to civilian markets. TriCera is currently collaborating with the Police of the Czech Republic on advanced mobile ballistic shields, designed to withstand extreme conditions where conventional ceramic-polymer shields fail. Additionally, the company is developing next-generation safes, leveraging the composite's high-temperature resistance and reduced weight to create superior security solutions. With exclusive expertise in ceramic-metal armor, TriCera is now focusing on B2B market expansion, actively promoting its solutions at major defense and security expos such as IDET in Brno. The company stands as a leader in advanced materials engineering, bridging cutting-edge research with real-world applications in security and defense.

4. **[Lightigo s.r.o.](#)** Lightigo s.r.o. specializes in the development and production of advanced analytical instruments for rapid elemental analysis, leveraging Laser-Induced Breakdown Spectroscopy (LIBS)—one of the most promising elemental analysis techniques today. Founded in 2019 by a team of experienced researchers and developers, Lightigo is dedicated to delivering quick, flexible, and resource-efficient solutions for industrial and laboratory applications. Lightigo's flagship product, FireFly, is a high-performance LIBS system designed for multi-elemental analysis and chemical imaging. Equipped with a motorized 3-axis stage, laser spot size control, and fast elemental mapping, FireFly provides precise, high-speed material characterization across various industries. Additionally, Lightigo offers SyncRay, a 5-channel Digital Delay Generator for nanosecond-precision synchronization of analytical instruments, and high-precision motorized sample stages for automated material analysis. Beyond its standard product line, Lightigo develops custom-designed LIBS systems tailored for in-situ analysis, multilayer depth profiling, quality control, and hazardous element detection.

Working in close collaboration with CEITEC BUT's Laboratory of Laser Spectroscopy, Lightigo is at the forefront of innovative elemental analysis solutions, helping industries optimize processes, reduce waste, and enhance material characterization with cutting-edge LIBS technology.

5. [Lightigo Space s.r.o.](#) and [Lightigo Development s.r.o.](#) Established in 2022 as subsidiaries of Lightigo s.r.o., Lightigo Space s.r.o. and Lightigo Development s.r.o. extend the company's expertise in optics, materials analysis, and advanced electronics. Both startups maintain strong ties with CEITEC and focus on the development and transfer of cutting-edge technologies for industrial applications.

Lightigo Space specializes in high-precision optical and materials analysis systems, supporting industrial and space-related applications. By leveraging advanced spectroscopy and imaging technologies, the company provides innovative solutions for real-time material characterization and quality control.

Lightigo Development focuses on the design and production of state-of-the-art electronics, hardware, and control software for optomechanical and mechatronic devices. The company offers custom electronics development, from high-performance PCB design to firmware programming in ASM, C, C++, and VHDL.

With expertise in custom hardware, software, and electronics development, Lightigo's subsidiaries provide comprehensive engineering solutions, helping industries enhance precision, automation, and efficiency in cutting-edge technological applications.

Table 3.5.1 - Summary of non-public revenues received during the period under evaluation

Type of revenue	Revenue (in thousands CZK/EUR)				
	2019	2020	2021	2022	2023
Licenses sold	2,011/79	730/28	214/8	463/18	987/39
Paid training courses for employees of application-sector entities	1.650/65	349/13	221/9	298/12	357/14
Consulting and advisory services				268/11	118/5
Donations – noninvestment	1,657/65	1,993/47	1,312/52	1,222/48	1,381/54
Donations – investment		329/13	11/0		
Total	5,318/210	2,601/103	1,757/69	2,251/89	2,851/112

Note: Enter funds raised for R&D&I from non-public sources besides grants or contract research (e.g. licences sold, spin-off company revenues, donations, etc.) in the calendar year.

POPULARIZATION OF VAVAI

3.6 The most important activities in the field of popularization of R&D&I and communication with the public

The evaluated unit shall briefly describe its main activities related to the popularisation of R&D&I and communication with the public (e.g. popularisation lectures, citizen science initiatives, etc.) during the period of 2019–2023 and provide up to 10 examples that it considers the most significant.

Maximum 500 words plus 200 words for each example given.

Self-assessment:

CEITEC is highly active in various public relations initiatives and the popularization of science, aiming to engage the widest possible audience. As part of the CEITEC consortium, our outreach and communication efforts are closely coordinated with CEITEC at the Masaryk University. Together, we employ approximately 4.5 full-time equivalent (FTE) staff dedicated to popularization and public engagement, with CEITEC BUT contributing 1.5 FTE to these activities.

One of the key indicators of our growing public engagement is our increasing social media presence. In 2024, our total social media following experienced steady growth, reaching 6,300 followers on [Facebook](#) (a 3% increase from 2023), 11,811 on [LinkedIn](#) (a 27% increase), 4,798 on Twitter (X) (a 9% increase), and 3,020 on [Instagram](#) (a 17% increase). Note, that since 2025 we are no longer on Twitter/X, in 2025 we have changed X to [Bluesky](#).

Our activities range from large-scale events such as science nights to interdisciplinary science-art projects, where the CEITEC BUT facility serves as a platform for displaying visually inspiring, science-driven artwork. Additionally, we host an annual open competition for the best science-art photograph, organize open days, provide STEM training for middle-school teachers, and conduct summer schools for middle-school students. The extent of our public engagement is demonstrated through the examples detailed below.

Researchers' Night

The annual Researchers' Night at CEITEC BUT invites the public to explore the world of science through interactive demonstrations and experiments. For example, the year 2024 theme, *Transformation*, highlighted scientific evolution and technological advancements.

A key highlight is the "Turn into a Scientist" competition, where selected participants gain exclusive access to CEITEC Nano's cleanrooms, learning about advanced research and electron microscopy. Visitors can also experience X-ray computed tomography, revealing hidden structures within objects, and laser-induced plasma spectroscopy (LIBS) for rapid chemical analysis. Other interactive stations include smart sensor technology, advanced biomaterials, material transformations through heat and light, and electrical and magnetic signal research, showcasing the latest innovations in these fields. Attendees can engage in making robots, launching micro-nano robots, and even testing 3D-printed energy generators made from Moon dust.

Science meets art at the creative corner, where visitors color microscope images and create science-themed art. With participation from various CEITEC research groups, the event attracts 200–500 visitors annually, making science accessible and engaging. More: <https://www.ceitec.eu/researchers-night-2024-at-ceitec-but/a4897>

CEITEC Student Talent Summer School

Launched in 2021, the **CEITEC Student Talent Summer School** is part of a broader initiative to cultivate young scientific talent at the secondary-school level. Each summer, up to 30 high school students are selected to form six teams, competing for the Director's Prize for the best scientific achievement.

The program provides students with a hands-on research experience, immersing them in real scientific work. Participants are chosen based on their motivation, as expressed in their cover letters. Over the course of a week at CEITEC BUT, they collaborate on actual scientific projects under the guidance of PhD student mentors.

At the end of the program, students present their findings before an expert jury, composed of representatives from CEITEC Management, the City of Brno, company sponsor (Thermo Fisher Scientific), and the South Moravian Innovation Centre (JIC). They must justify their approach and highlight the potential applications of their research.

Having successfully run four times, the summer school continues to be highly popular, attracting twice as many applicants as available spots. The event has also gained strong media attention, further enhancing its reputation as a prestigious opportunity for young aspiring scientists. See more: <https://www.ceitec.eu/summer-school/>

Art in Nanoscale

The exhibition *Art in the Nanoscale* emerged from the interdisciplinary project *Art-Scientific Laboratory*, initiated by Štěpánka Piskáčková as part of her doctoral research at the Faculty of Art and Design, University of Jan Evangelista in Ústí nad Labem. The project explores the intersection of art and science, particularly nanotechnology, fostering collaboration between artists and scientists from CEITEC Nano, with seven scientists from CEITEC participating. The exhibition, held from September 30 to October 24, 2022, at CEITEC BUT, showcased six interdisciplinary works, including experimental sculptures, photography, and light installations.

The works reflect scientific concepts artistically, such as *Pozlátko* by Klára Samcová and Jan Michalička, which features gold-coated flies flying around a structure inspired by electron microscopy images of gold crystals. Another installation, *AISI 304* by Václav Mach and Jan Michalička, translates atomic structures of stainless steel into sculptural forms. An interactive piece, *Beyond the Image of Spin Waves* by Piskáčková, Michal Urbánek, and Ondřej Wojewoda, visualizes magnetic wave propagation.

A monograph titled *On the Borders of Art and the Natural Sciences* was published, documenting the project's outcomes and theoretical framework. This one-off collaboration demonstrated mutual creativity, bridging scientific precision with artistic expression. Following its presentation in Brno, the exhibition moved to the House of Art in Ústí nad Labem in December 2022. More: <https://knihy.artmap.cz/na-pomezí-umení-a-přirodních-ved/?srltid=AfmBOooKQ25OazXkZa-aZ2fIl-JvEWF13BJ5ni-OJrMqscqwbo7p0GK->

And <https://artmap-prod-staging.mgw.cz/umeni-v-nanosvete/>

Days of Electron Microscopy

CEITEC BUT is a key partner in Brno's flagship initiative, the Days of Electron Microscopy (DEM), which promotes science to the wider public, including children and families. This annual week-long event celebrates Brno's status as a global center for electron microscopy, with one-third of the world's electron microscopes produced in the city. The event features collaborations among universities, research centers, and manufacturing companies, offering lectures, laboratory tours, scientific games, and experiments. Each year, a central theme is selected to convey complex topics engagingly. CEITEC BUT actively participates by organizing programs that include lectures and laboratory visits, each lasting approximately two hours. These sessions are tailored for various audiences, including school groups. The event is coordinated by the Brno Observatory and Planetarium, in partnership with local

electron microscope manufacturers and research institutions, aiming to make electron microscopy accessible and engaging for all. More at: <https://dembrno.cz/>.

Festival of Science and Technology

The [Festival of Science and Technology](#) is one of Brno's key science events, engaging the wider public with interactive exhibits and hands-on demonstrations. Held annually at the Brno Exhibition Centre, it brings together over forty institutions, including universities, research centers, and private companies.

CEITEC BUT is a regular and active participant, offering engaging experiences that allow visitors to explore the world of cutting-edge research. Through interactive exhibits, it aims to demystify scientific work, showcase real-world applications of advanced technologies, and inspire the next generation of scientists and engineers.

Organized by the Brno Observatory and Planetarium, the festival is free to the public and supported by the City of Brno and the South Moravian Region. As one of the largest science outreach events in the region, it serves as a platform to promote CEITEC's activities to the public, particularly aspiring future scientists, making science and technology accessible to attendees of all ages.

BUT Junior

BUT Junior is an educational initiative by Brno University of Technology (BUT) designed for middle school students (aged 10-15). The program introduces participants to the university environment, modern technologies, and the latest scientific discoveries, fostering an early interest in STEM fields. Through hands-on activities and tailored lectures, students gain a glimpse into university life, participating in a simulated academic journey that includes matriculation and graduation ceremonies. The program is structured as informal, extracurricular education, with ten Saturday sessions throughout the academic year. Each session is held at different BUT faculties and research centers, exposing students to diverse scientific fields. Activities are interactive and engaging, incorporating elements of experimentation and play to enhance learning, particularly in physics and chemistry.

CEITEC BUT has been an integral part of BUT Junior, dedicating one Saturday each spring to offering students a firsthand look at cutting-edge research and nanotechnology. Participants explore CEITEC Nano's state-of-the-art cleanrooms, gaining insight into the real-world applications of advanced science. This initiative helps nurture curiosity and encourage future scientists and engineers, giving them a head start in their academic and professional journeys.

More on <https://www.vut.cz/junior>.

Specialized training program for STEM high school teachers

As part of our ongoing efforts to increase interest in STEM studies among local high school students, CEITEC BUT has launched a specialized training program for high school teachers. Recognizing the influence educators have on students' career choices, we aim to equip teachers with hands-on experience and advanced scientific knowledge that they can bring back to their classrooms.

Each year, CEITEC BUT organizes one-day training sessions, providing teachers with unique insights into cutting-edge research environments. Last year, we welcomed seven high school teachers into our state-of-the-art cleanroom facilities, where they had the rare opportunity to fabricate their own silicon wafer—customized with their school's logo. This practical experience not only enhances their understanding of nanotechnology and semiconductor processing but also helps them inspire and engage their students in STEM subjects.

By directly involving teachers in interactive and high-tech experiments, CEITEC BUT strengthens the bridge between academic research and high school education. This initiative not only enhances

science teaching at the high school level but also fosters a deeper connection between CEITEC and the next generation of scientists and engineers, ensuring a future talent pipeline in STEM disciplines.

CEITEC BUT: A Hub for Innovation and Scientific Engagement

Beyond structured and regular outreach programs described above, CEITEC BUT remains open to ad hoc visits from various interested parties, including foreign ambassadors, official state delegations, and representatives visiting the South Moravian Region. As a leading scientific institution in the region, CEITEC BUT serves as a showcase of cutting-edge research and innovation.

In addition, CEITEC BUT also actively participates in various scientific and industry-focused events, strengthening collaboration across academia, industry, and policymaking. For instance, our researchers regularly engage with the [Brno region Microscopy Platform](#), contributing to electron microscopy discussions and networking. CEITEC BUT also plays an active role in initiatives such as the Week for Digital Czechia, where we highlight developments in AI, automation, and digital transformation, and the International Engineering Fair (MSV), where we regularly exhibit for industry professionals.

IMPLEMENTATION OF RECOMMENDATIONS

3.7 Implementation of the recommendations in Module 3

The evaluated unit will briefly describe how it has implemented the recommendations for Module 3 from the previous evaluation period, if applicable.

Maximum 1000 words.

Self-assessment: During the 2020 evaluation by the International Evaluation Panel, it is important to note that CEITEC BUT received one of the highest scores among the entire university. In a total of eleven categories, CEITEC BUT achieved the maximum score of 5 (Excellent) on eight occasions and scored 4 (Very Good) three times. The feedback from the board can be best summarized by several notable citations from the IEP report. These citations either relate to the university as a whole (specifically module 4 and 5) or provide comments on the evaluation of CEITEC itself (module 3).

Regarding the university as a whole, the IEP report states: “CEITEC once again appears as a model institution (ref. 4.15 IEP report)” and “Very positive is that CEITEC runs its own international doctoral school (ref. 4.6)”. Furthermore, it mentions, “So far, this system has been implemented (very successfully) mainly at CEITEC (ref. 4.20)”, and highlights that “only specific centres of excellence (e.g., CEITEC) are specifically international centres (ref. 5.1)”. The report also states that “BUT as a whole should be better recognized internationally, whereas CEITEC can serve as a gateway to that objective (ref. 5.2)”.

In terms of evaluating CEITEC, the report emphasizes that “CEITEC BUT unit is an excellent research centre with a really nice performance during his few years of existence,” and highlights the strength of the unit, stating: “The strength of the unit is clearly its incredible potential of state-of-the art characterization tools and techniques, at the level of the best centres in the world for nanoscience. What is definitely even more important than facilities is a human capital – there is at CEITEC presently working skilled research teams with high know-how in the areas of advanced nanotechnologies. This together with the quality and enthusiasm of its young researchers (own international PhD school, 120 enrolled students), can make of this centre a real player in the arena of European nanotechnology,” (ref. “Overall assessment,” p. 83).

While the evaluation report highlighted the impressive achievements of CEITEC BUT, it also provided valuable suggestions for further improvement. These recommendations include: deeper Internationalization, effective Utilization of State-of-the-Art facilities, alumni relations, intellectual property (IP) creation and protection, and popularization and dissemination of Results.

It is worth noting that while these recommendations were acknowledged and a statement was drafted in response on March 26, 2021, the implementation of these suggestions was significantly affected by the onset of the COVID-19 pandemic, which heavily disrupted operations and activities at CEITEC BUT for nearly two subsequent years. In the post-COVID period, we have aligned our efforts with our long-term strategy, focusing on several key areas identified in the IEP and ISAB recommendations. These include deeper internationalization, technology transfer, applied research outcomes, recognition within the scientific community, and science popularization. The results of these efforts are outlined in this report.

The comprehensive response, which remains valid in several aspects, exceeds the word count limitations of this page.

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)
The respective links were provided in the text for improved clarity.		

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: Institute of Forensic Engineering (IFE)

FORD: 5 - Social sciences

SOCIAL CONTRIBUTION OF THE EVALUATED UNIT

3.1 Introductory information about the unit under evaluation

The evaluated unit will describe its mission and vision and provide a general self-reflection of the societal contribution of R&D&I, along with its long-term goals in the fields it develops. The distribution of research activities by type of research will also be commented on.¹ The evaluated unit will describe its organisational structure and size (staffing, number of students, number of study programmes implemented, etc.) based on the data provided in annex tables 3.1.1 to 3.1.6.

Maximum 1000 words.

This is a non-rated indicator that serves as an introduction to the evaluated unit, providing context for data in indicators 3.2-3.7.

Self-assessment:

The Institute of Forensic Engineering (IFE) at the Brno University of Technology (BUT) is relatively small but unique stand-alone university institution (i.e. not included as a part of any faculty) and was founded in 1965 (first as a Department of the BUT Headquarters, since 1970 as a university institution) to ensure the specific needs of the forensic engineering discipline including the education of experts. From an organisational point of view the IFE consists of three expert departments and a supportive one (administration and economics).

- Department of expertise in construction and real estate valuation (<https://www.vut.cz/en/usi/institute/structure/son>);
- Department of expertise in engineering, traffic accident analysis and valuation of motor vehicles (<https://www.vut.cz/en/usi/institute/structure/asn>);
- Department of Risk Engineering (<https://www.vut.cz/en/usi/institute/structure/oir>).

The mission of the IFE lies both in the research and development of forensic engineering methods and in their application through the preparation of expert opinions in complex and difficult cases entrusted to the Institute by courts and other public authorities, including the police. Solving of these cases requires research approaches and the effective development and realization of technical forensic science requires academic staff in this unique field. Research activities are strongly oriented toward practical application, particularly through close collaboration with public authorities. Knowledge transfer into practise is supported not only by R&D projects, but also via expert opinions in complex cases. R&D and other creative activities are followed and reinforced by educational activities. The primary mission is to provide top-quality education in the field of Forensic Science. There are three master's degree programmes and one PhD programme. IFE also provides lifelong education and training necessary for the expert witnesses and related professions. The master's programmes prepare experts in forensic science in the areas of transportation and traffic, real estate and risk engineering relating with technical disciplines, i.e. mechanical, civil, electronical, IT and chemical engineering, and economics disciplines.

¹ Basic, applied, contract, artistic research (see Definition of Terms in Methodology HEI2025+).

As IFE strongly develops and supports a concept of deep intra-university collaboration, the programmes are conducted in cooperation with other faculties of BUT (Faculty of Business and management, Faculty of Civil Engineering, Faculty of Electrical Engineering and Communication, Faculty of Mechanical Engineering, Faculty of Chemistry, or Faculty of Information Technology), which represents a unique scheme in the given field of education. The interlinking of education and research in the entire field of forensic sciences in one workplace is quite exceptional in the Czech Republic and abroad - usually, even if universities deal with forensic sciences, they do not develop this field as a whole, but only with regard to their professional focus. The PhD programme, only in the forensic engineering domain in the Czech Republic, allows to prepare new scientists to be involved in research in forensic science and in its application. As forensic engineering affects not only technical, natural and economic sciences that fall within the competence of BUT, but also medicine and humanities, including e.g. psychology, sociology and law, IFE cooperates very closely with Masaryk University and Transport Research Centre (CDV), which scientifically covers these areas.

As a unique expert institute in the Czech Republic, which combines research and development activities in the field of forensic methods, educational activities and real practice in forensic engineering, the Institute is perceived as a prestigious institute in the field and is invited to prepare expert opinions in particularly difficult cases (especially in criminal proceedings), where scientific assessment is necessary for the decision in the case. Similarly, the Institute is consulted by the Ministry of Justice on the legal and sub-legal regulation of expert activities in the Czech Republic.

IFE is also a methodological workplace in the field of accident analysis in the Czech Republic. The focus of the outputs of the scientific work lies in the creation of scientific standards, which serve after rigorous external opposition to experts in the given fields of expert activity. In addition to methodological activities and standardization in the field of forensic engineering and expert activities, the IFE focuses on several research topics whose results provide a quality basis, especially for forensic sciences development:

- crash analysis (including simulation modelling) and documentation;
- human factor in traffic;
- liquidation of the crash consequences;
- investigation of the properties of building materials and energy efficiency of buildings;
- risk management and risk analysis in transport, industry and critical infrastructure.

Considering the evaluation in 2024 (<https://www.vut.cz/en/rad/quality-assurance/2024>), the evaluators emphasized that IFE key strength lies in strong applied research with, particularly in traffic safety and forensic engineering. IFE's applied research has a substantial societal impact, especially in public safety, legal frameworks, and environmental health. The institution also stands out for its interdisciplinary approach across a wide range of research areas and its unique doctoral program in Forensic Engineering, the only one of its kind in the Czech Republic.

Table 3.1.1 – Staffing per FTE²

Academic / professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	1.0/0	1.1/0	1.3/0	1.3/0	1.3/0	6.0/0
Associate Professor	4.5/0.1	4.5/0.1	4.9/0	3.5/0	3.2/0	20.6/0.2
Assistant Professor	8.1/2.0	8.3/2.2	9.2/3.3	8.2/2.4	8.3/2.3	42.1/12.2
Assistant	0/0	0.5/0.2	1.9/0.3	1.0/0	1.3/0.3	4.8/0.8
R&D Personnel ³	0/0	0/0	0/0	0/0	0/0	0/0
Researchers in other categories ⁴	1.8/1.1	2.5/0.8	1.1/0.2	1.3/0	0/0	6.7/2.1
Technical and economic staff ⁵	18.2/10.9	16.7/10.7	12.7/10.6	12.9/10.2	12.5/9.4	73.0/51.9
Scientific, research and development staff involved in teaching activities	0/0	0/0	0/0	0/0	0/0	0/0
Early career researchers ⁶	0/0	0.4/0	0/0	0/0	0/0	0.4/0
Total ⁷	33.7/14.1	33.9/14.0	31.1/14.4	28.2/12.6	26.7/12.0	153.6/67.1

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

² The average number of hours worked is calculated as the ratio of the total number of hours actually worked during the reference period, from 1 January to 31 December, by all staff (including agreement on work activity, excluding agreement on work performance) to the total annual working time pool per full-time employee. The full-time status of the worker in the evaluated unit is always reported. If an employee holds more than one type of full-time job within the evaluated unit, the total sum of the two shall be reported.

³ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

⁴ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

⁵ Who participates in the management and support of R&D&I in the institution.

⁶ See Definition of Terms in Methodology HEI2025+.

⁷ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

Table 3.1.2 – Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2019 (numbers of physical employees and personnel)⁸

Academic / professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	0	0	0	0	2	0	0	0
Associate Professor	0	0	0	0	2	1	1	0	2	1	0	0
Assistant Professor	0	0	6	2	3	1	0	0	0	0	1	0
Assistant	0	0	0	0	0	0	0	0	0	0	0	0
R&D Personnel ⁹	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁰	3	2	0	0	0	0	0	0	0	0	1	1
Technical and economic staff ¹¹	2	2	6	2	4	2	5	5	2	2	0	0
Scientific, research and development staff involved in teaching activities	0	0	0	0	0	0	0	0	0	0	0	0
Early career researcher ¹²	0	0	0	0	0	0	0	0	0	0	0	0
Total ¹³	5	4	12	4	9	4	6	5	6	3	2	1

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D Personnel, Researchers in other categories and Technical and economic staff are mutually exclusive, i.e. one staff member is reported in only one category. The categories of scientific, research and development staff involved in teaching activities and early career researchers are reported collectively for all the above-mentioned categories.

⁸ The total number of employees/workers as of 31st December of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

⁹ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁰ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹¹ Who participates in the management and support of R&D&I in the institution.

¹² See Definition of Terms in Methodology HEI2025+.

¹³ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I Personnel, Researchers in other categories and technical and economic staff.

Table 3.1.3 – Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2023 (numbers of physical employees and personnel)¹⁴

Academic / professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	0	0	1	0	1	0	0	0
Associate Professor	0	0	0	0	2	0	1	0	0	0	1	0
Assistant Professor	0	0	6	2	4	1	2	2	0	0	1	0
Assistant	0	0	1	0	0	0	1	1	0	0	0	0
R&D Personnel ¹⁵	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁶	0	0	0	0	0	0	0	0	0	0	0	0
Technical and economic staff ¹⁷	1	0	3	1	4	3	4	2	2	2	0	0
Scientific, research and development staff involved in teaching activities	0	0	0	0	0	0	0	0	0	0	0	0
Early career researcher ¹⁸	0	0	0	0	0	0	0	0	0	0	0	0
Total ¹⁹	1	0	10	3	10	4	9	5	3	2	2	0

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

Table 3.1.4 – Students

Type of study	2019		2020		2021		2022		2023		Total	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Undergraduate	0	0	0	0	0	0	0	0	0	0	0	0
Master's ²⁰	267	114	198	77	168	66	128	54	209	91	652	402
Doctoral	45	18	46	16	35	13	34	12	33	13	74	72
Lifelong Learning	80	19	74	13	134	15	191	33	130	16	156	96
Total	392	151	318	106	337	94	353	99	372	120	882	570

¹⁴ The total number of employees/workers as at 31.12. of the calendar. Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

¹⁵ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁶ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹⁷ Who participates in the management and support of R&D&I in the institution.

¹⁸ See Definition of Terms in Methodology HEI2025+.

¹⁹ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

²⁰ All master's degree students are listed, regardless of the length of their programme of study.

Table 3.1.5 – Studies

Type of study	2019		2020		2021		2022		2023		Total	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Undergraduate	0	0	0	0	0	0	0	0	0	0	0	0
Master's	270	116	201	79	169	67	128	54	209	91	689	287
Doctoral	45	18	46	16	35	13	34	12	33	13	75	28
Lifelong Learning	80	19	74	13	134	15	191	33	130	16	156	34
Total	395	153	321	108	338	95	353	99	372	120	764	315

Table 3.1.6 – Study programmes in Czech/English

Type of study programme	Total ²¹ / Of which professional study programmes											
	2019		2020		2021		2022		2023		Total	
Undergraduate	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Master's	3 / 0	0 / 0	3 / 0	0 / 0	3 / 0	0 / 0	3 / 0	0 / 0	3 / 0	0 / 0	3 / 0	0 / 0
Doctoral	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	1 / 0	0 / 0	2 / 0	0 / 0
Lifelong Learning courses	4 / 0	0 / 0	4 / 0	0 / 0	4 / 0	0 / 0	2 / 0	0 / 0	2 / 0	0 / 0	5 / 0	0 / 0
Total	8 / 0	0 / 0	8 / 0	0 / 0	8 / 0	0 / 0	6 / 0	0 / 0	6 / 0	0 / 0	10 / 0	0 / 0

Note: For each SP type, enter the number of SPs in Czech language in the first cell and insert the number of SPs in English language after the slash in the same cell (e.g. 15/3), enter the number of professional SPs in Czech language in the second cell and insert the number of professional SPs in English language after the slash. Follow a similar procedure in the last column of the table (Total).

Table 3.1.7 – R&D&I capacities

R&D&I field	FORD	FORD share [%]	Predominant type of research	Total share of industry group [%]
1. Natural Sciences	1.1 Mathematics		Zvolte položku.	5%
	1.2 Computer and information sciences		Zvolte položku.	
	1.3 Physical sciences		Zvolte položku.	
	1.4 Chemical sciences		Zvolte položku.	
	1.5 Earth and related environmental sciences		Zvolte položku.	
	1.6 Biological sciences		Zvolte položku.	
	1.7 Other natural sciences	5%	Applied Research	
2. Engineering and Technology	2.1 Civil engineering	20%	Applied Research	50%
	2.2 Electrical engineering, Electronic engineering, Information engineering		Zvolte položku.	
	2.3 Mechanical engineering	20%	Applied Research	
	2.4 Chemical engineering		Zvolte položku.	
	2.5 Materials engineering		Zvolte položku.	
	2.6 Medical engineering		Zvolte položku.	
	2.7 Environmental engineering	10%	Applied Research	
	2.8 Environmental biotechnology		Zvolte položku.	
	2.9 Industrial biotechnology		Zvolte položku.	
	2.10 Nanotechnology		Zvolte položku.	

²¹ The total number of study programmes for which admissions have been announced in a given academic year.

	2.11 Other engineering and technologies		Zvolte položku.	
3. Medical and Health Sciences	3.1 Basic medicine		Zvolte položku.	
	3.2 Clinical medicine		Zvolte položku.	
	3.3 Health sciences		Zvolte položku.	
4. Agricultural and veterinary sciences	4.1 Agriculture, Forestry, and Fisheries		Zvolte položku.	
	4.2 Animal and Dairy science		Zvolte položku.	
	4.3 Veterinary science		Zvolte položku.	
	4.4 Other agricultural sciences		Zvolte položku.	
5. Social Sciences	5.1 Psychology and cognitive sciences		Zvolte položku.	
	5.2 Economics and Business	25%	Applied Research	
	5.3 Education	5%	Applied Research	
	5.4 Sociology		Zvolte položku.	
	5.5 Law	5%	Applied Research	
	5.6 Political science		Zvolte položku.	
	5.7 Social and economic geography		Zvolte položku.	
	5.8 Media and communications		Zvolte položku.	
	5.9 Other social sciences	10%	Applied Research	
6. Humanities and the Arts	6.1 History and Archaeology		Zvolte položku.	
	6.2 Languages and Literature		Zvolte položku.	
	6.3 Philosophy, Ethics and Religion		Zvolte položku.	
	6.4 Arts (arts, history of arts, performing arts, music)		Zvolte položku.	
	6.5 Other Humanities and the Arts		Zvolte položku.	
Total		100 %	-	100 %

RECOGNITION BY THE RESEARCH COMMUNITY

3.2 Recognition by the research community

The evaluated unit will briefly comment on its position in the research community. It shall consider individual and other prestigious R&D&I awards, participation of its academic staff in the editorial boards of international scientific journals, elected membership in professional societies, major invited lectures given by the evaluated unit's academic staff abroad or by foreign scientists and other relevant guests at the evaluated unit. Additionally, it will address the involvement of staff in the evaluation of national or European project/programme calls over the period of 2019–2023 based on the data provided in annex tables 3.2.1 to 3.2.5 (max. 10 most relevant items). If necessary, the evaluated unit shall list any additional services to the scientific community that it considers relevant.

Maximum 1000 words.

Self-assessment:

The **Institute of Forensic Engineering (IFE)** at Brno University of Technology has established itself as a prestigious institution within the research community, recognized for its contributions to forensic engineering and interdisciplinary fields. During the time period of 2017-2025, IFE solved or IFE's

experts participated on 104 internal and external project and research activities, both on national and international levels. IFE is recognized for its exceptional research contributions, such as the development of unique methodologies and standards in forensic engineering and their applications in court proceedings and expert witness practices (e.g. The Expert Standard No. 1/2022; The Road Traffic Accidents Reconstruction Standard; The Methodology for Investigating the Scene of a Traffic Accident; Determination of Usual Costs for Rental of Replacement Vehicles and Comparison of Individual Painting Technologies etc.).

IFE researchers are members of major professional organisations such as the European Association for Accident Research and Analysis (EVU), Europe's leading accident research association, ASTM (American Society of Testing and Materials) and the European Real Estate Society (ERES), contributing to and shaping standards and practices in forensic science worldwide. As the only partner from the Czech Republic, IFE co-organised [WREX2023](#), the world's largest conference on accident analysis, and participates in the preparatory committee for WREX2030.

By consistently engaging in high-impact research, forming strategic partnerships, and contributing to professional discourse, IFE solidifies its reputation as a cornerstone in the forensic engineering research community. The professional erudition of the IFE experts is also evident in the significant awards by both state entities, e.g. the Police of the Czech Republic, and private entities, e.g. the Czech Association of Scientific and Technical Societies or the Czech Medical Society of J. E. Purkyně, and Czech Society of Forensic Medicine and Toxicology, listed (see Tab. 3.2.1). Regarding their professional activities, IFE experts serve on Editorial Boards of international experts' journals (see Tab. 3.2.2) and are actively involved in review and refereeing procedures (see Tab. 3.2.3). They are also involved in the evaluation of research and expert project proposals. Professional erudition of IFE staff is also reflected in regular invitations to give lectures or similar activities at foreign universities, research institutions and mainly at the professional events or workshops.

Considering the evaluation in 2024 (<https://www.vut.cz/en/rad/quality-assurance/2024>), the evaluators emphasized that IFE's research outputs and methodologies are widely recognized, used by public authorities, insurance companies, and academic circles. IFE activities raising awareness of forensic science issues and promoting knowledge exchange.

Table 3.2.1 – Prestigious R&D&I awards granted during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the award	Awarding institution
prof. Ing. Albert Bradáč, DrSc.	Honorary Badge of ČSVTS	Czech Association of Scientific and Technical Societies, Prague
doc. Ing. Aleš Vémola, Ph.D.	Police Traffic Service Medal	Directorate of Traffic Police Service, Police Presidium of the Czech Republic
doc. Ing. Aleš Vémola, Ph.D.	Honorary Membership, 1st Degree	Czech Medical Society of J. E. Purkyně and Czech Society of Forensic Medicine and Toxicology
doc. Dr. habil. Ing. Pavel Foltin, Ph.D.	Gold Badge	Association of Private Security Services of the Czech Republic

Note: Provide up to 10 examples.

Table 3.2.2 – Participation of academic staff of the evaluated unit in editorial boards of international scientific journals during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of scientific journal, ISSN
Ing. Albert Bradáč, Ph.D.	Soudní inženýrství, ISBN: 978-80-7623-102-3
prof. Ing. Albert Bradáč, DrSc.	Soudní inženýrství, ISBN: 978-80-7623-102-3

doc. Dr habil. Ing. Pavel Foltin, Ph.D.	Przegląd Naukowo - Metodyczny, Edukacja dla Bezpieczeństwa, ISSN 1899-3524
doc. Dr habil. Ing. Pavel Foltin, Ph.D.	Motor Transport Journal, ISSN 1731-2795
doc. Dr habil. Ing. Pavel Foltin, Ph.D.	Military Science Review, ISSN 2060-0437
doc. Dr habil. Ing. Pavel Foltin, Ph.D.	Journal of Defense Resources Management (JoDRM), ISSN 2068-9403
doc. Ing. Robert Kledus, Ph.D.	Soudní inženýrství, ISBN: 978-80-7623-102-3
prof. Ing. Karel Pospíšil, Ph.D., LL.M.	Transactions on Transport Sciences, 1802-9876
prof. Ing. Karel Pospíšil, Ph.D., LL.M.	Soudní inženýrství, ISBN: 978-80-7623-102-3
prof. Ing. Karel Pospíšil, Ph.D., LL.M.	Roads and Bridges-Drogi i Mosty, ISSN 1643-1618 / 2449-769X
doc. Ing. Bc. Marek Semela, Ph.D.	Soudní inženýrství, ISBN: 978-80-7623-102-3
doc. Ing. Aleš Vémola, Ph.D., dr.h.c.	Soudní inženýrství, ISBN: 978-80-7623-102-3

Note: Please provide up to 10 examples of academic staff participation in editorial boards of international scientific journals (e.g. editor, editorial board member, etc.).

Table 3.2.3 – The most important invited lectures delivered by the academic staff of the evaluated unit at foreign institutions during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Invited lecture title	Name of host institution, or name of conference or event	Year
Ing. et Ing. Kateřina Bucsuházy, Ph.D.; Ing. Et Ing. Bc. Martin Bílík, Ph.D.	Modern Methods for Documenting and Analyzing Vehicle Damage	Asociácia znalcov cestnej dopravy (Association of Road Transport Experts), Slovakia	2022
Doc. Ing. Bc. Marek Semela, Ph.D.	Possibilities for Documenting Traffic Accident Scenes and Vehicle Damage Using a Mobile Phone	Association of Road Transport Experts, Slovakia	2022
Michal Křížák	Use of Video Recordings in Traffic Accident Analysis	Association of Road Transport Experts, Slovakia	2022
Ing. Roman Mikulec, Ph.D.	Analysis of lateral vehicle displacement on wet surface	Instytut Ekspertyz Sądowych, Kraków, Poland	2021
doc. Dr. habil. Ing. Pavel Foltin, Ph.D.	(1) Humanitarian Logistics - Humanitarian Crisis and Disaster Relief (2) Supply Chain Security and Resilience - Key Aspect of Business Continuity (3) Novel Technologies and their Implication for Supply Chains	Corvinus University	2023

Note: Provide up to 10 examples.

Table 3.2.4 – The most important lectures by foreign scientists and other guests relevant to R&D&I at the evaluated unit during the evaluation period

Name, surname and title(s) of the lecturer	Lecturer's employer at the time of the lecture	Invited lecture title	Year
Oren Musicant	Ariel University, Izrael	Autonomous vehicles - the human factors challenge	2021
Greg Sullenberger	Vector Collision Analysis, USA	Police Crash Investigation in the USA	2021
Baptiste Sandoz	École nationale supérieure d'Arts et Métiers, France	Human biomechanics and the autonomous vehicle	2019
André Gazsó	Institute of Technology Assessment Vienna, Austria	Risk and safety of nanotechnology	2019
Christoph Kogler	Universität Für Bodenkultur BOKU, Austria	Wood Supply Game	2023

Marek Vanžura	George Mason University, Washington, USA	Deployment of autonomous vehicles	2023
Piotr Ciepka, Jakub Zebala	Instytut Ekspertyz Sądowych, Kraków, Poland	Braking Deceleration Tests of Urban Buses	2023
Jakub Zębala, Karol Kwieciński	Instytut Ekspertyz Sądowych, Kraków, Poland	Uncertainty of recording speed changes in EDR	2022
Adam Reza, Piotr Ciepka, Robert Janczur	Instytut Ekspertyz Sądowych, Kraków, Poland	Digital tachographs - speed verification	2020

Note: Provide up to 10 examples.

Table 3.2.5 – Involvement in the evaluation of national/European research project/programme calls relevant to the R&D&I area at the unit during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the project/programme call research	Name of the authority/guarantor project/programme call contracting agency	Year
Ing. Albert Bradáč, Ph.D.	DOPRAVA 2020+, Alfa, Omega, Sigma, Eta	Technology Agency of the Czech Republic	Since 2018
Ing. et Ing. Kateřina Bucsuházy, Ph.D.	SIGMA	Technology Agency of the Czech Republic	2023
doc. Dr. habil. Ing. Pavel Foltin, Ph.D.	Inter Excell	Ministry of Education, Youth and Sports, Czech Republic	Since 2014
doc. Dr. habil. Ing. Pavel Foltin, Ph.D.	Member of Verification and Validation Panel for Evaluation of the Research Outcomes (Panel SVHb)	Office of the Government of the Czech Republic, Czech Accreditation Board	Since 2016
prof. Ing. Karel Pospíšil, Ph.D., LL.M.	Doprava 2020+	Technology Agency of the Czech Republic	Up to 2022

Note: Provide up to 10 examples.

RESEARCH PROJECTS

3.3 Research projects

The evaluated unit shall list at most 10 (considered most significant by the evaluated unit) research projects/activities (regardless of whether they are supported by public funds or based on contract research²²) that it has implemented or participated in during the period of 2019–2023²³. This should be done from the full list in annex tables (Table 3.3.1-3.3.2)²⁴, regarding particularly the results achieved or the application potential of the projects. The unit should also describe how the research projects contributed to the mission and purpose of the evaluated unit. If the evaluated unit has been a participant in listed project, it shall indicate which other entities were involved and describe its contribution to the project. The interdisciplinary aspects of the projects will also be commented on, along with any collaboration with other units of the evaluated HEI.

Maximum 300 words per project.

²² For the definition of contract research for the purposes of evaluation in the HE segments, see Article 2.2.1 of the Community Framework for State Aid for Research, Development and Innovation 2014/C 198/01.

²³ Regardless of whether the projects are completed or still ongoing, provided that at least part of the project was implemented during the evaluation period.

²⁴ The evaluated unit shall only fill tables that are relevant to it.

Self-assessment:

The IFE aligns its research focus closely with the university's vision and own mission (see 3.1), by integrating technical, economic, and interdisciplinary approaches to address key challenges in forensic science. IFE's activities are deeply connected to practical applications, particularly through collaborations with public authorities, courts, and other entities, fostering innovative solutions for forensic science and practice. By bridging research and application, IFE integrates expertise across university faculties to advance forensic engineering and improve the quality of expert activities.

Key areas of IFE research include:

- **Development of Forensic Methodologies and Standards:** IFE focuses on creating reliable methodologies and standards to enhance the accuracy and consistency of forensic practices. These innovations directly support various stakeholders such as the police, the Ministry of Defence of the Czech Republic, and insurance companies.
- **Technological Innovations in Crash Analysis:** IFE develops advanced tools and methodologies, such as the Vehicle Damage Catalogue and LIBS-based devices, to improve crash scene documentation and analysis.
- **Simulation modelling:** In the analysis of road accidents and the prevention of crisis situations in the liquidation of the consequences of traffic accidents
- **Investigation of the Properties of Buildings:** Analyses connected with the investigation of the properties of building materials, energy efficiency of buildings and their effect on the price of real estate.
- **Expert Opinion Preparation in Complex Cases:** The institute is distinguished by its capacity to deliver expert analyses in intricate cases, contributing to legal proceedings and public trust.
- **Human Factors in Forensic Analysis.**

IFE's contribution to forensic science is characterized by its unique interdisciplinary approach and commitment to practical application, positioning it as a leading entity in the Czech Republic for forensic research and development.

Key projects:

- **Complex physiological monitoring of the driver with respect to psychological factors affecting driving behaviour** (Technology Agency of the Czech Republic; 2018 - 2020)

In line with the institute's mission, the project focused on the human factor in forensic science, examining interactions between humans, vehicles, and the environment. Comprehensive road crash analysis required a detailed understanding of human behaviour, including crash avoidance, perception, and response in critical situations influenced by various factors. To ensure valid data for forensic purposes, it was essential to account for human behaviour in the context of automation and remote control. The project focused on identifying and addressing the limitations of existing fatigue and stress detection systems. The main objective was to specify fundamental bio signals that could reliably detect critical driver states such as fatigue and stress under real driving conditions. Real-world studies conducted during the project generated a unique database of psycho-physiological data from road traffic, including bio signals, video signals, and psychological and driving data from controlled tests. This comprehensive dataset, supported by a feasibility study, served as a valuable tool for analysing road accidents. The outcomes contributed to forensic investigations, enhanced crash prevention efforts, and promoted advancements in driver monitoring technology. The project

was conducted in cooperation of Institute of Forensic Engineering, Institute of Biomedical Engineering BUT and the Palacký University Olomouc (Psychology Department). Project some details available at: <https://starfos.tacr.cz/en/projekty/TL01000216>)

- **Standards for the performance of expert activities in assessing the course and causes of traffic accidents** (Technology Agency of the Czech Republic; 2021 - 2023)

The project was carried out in direct alignment with the institute's mission. Its aim of the project was to harmonize and innovate existing procedures in the analysis of traffic accidents, so that experts would have uniformly applied criteria for interpreting the causes and course of accidents in the form of standards establishing a methodological procedure to serve as a unified application area. The existence of a standardized procedure for expert activities, in the form of defined standards, became the basis for a unified applied procedure, usable in the appointment of experts and their supervision in this area. One of the project results was also an expert book (<https://dspace.vut.cz/items/292325d5-8fe7-4f69-ba34-bde13d59214a>), which presents a complex systemic approach to road accident analysis, including examples, and considers changes in the legal environment of expert activities. The project was conducted in cooperation with the Faculty of Mechanical Engineering at BUT, the Masaryk University, the Czech Technical University in Prague, and University of Pardubice. Project details are available at: <https://starfos.tacr.cz/en/projekty/TL05000028?query=vx5qaac6qkoa#project-main>.

- **Modern methods of vehicle deformation documentation and analysis** (Technology Agency of the Czech Republic; 2021 - 2023)

The project built upon the institute's mission to further develop forensic sciences, as a precise and sufficiently detailed examination of the crash scene—including the involved vehicles and their damage—is fundamental to road crash analysis. The project aimed to research the usability of various methods for documenting and analysing vehicle damage for accident analysis and to validate these methods. The outcomes enhanced the inputs and refined the outputs in road accident analysis, significantly contributing to increasing legal certainty for accident participants and reducing secondary costs associated with accidents. Selected results were published in the monograph *Vehicle Crash Investigation: A Guidebook to Documentation and Analysis* (<https://shopcdv.cz/en-en/products/vehicle-crash-investigation-a-guidebook-to-documentation-and-analysis>). The crash analysis also required assessing the adequacy and mutual correspondence of the vehicle's damage, with the obtained data serving as the basis for the creation of *Catalogue of characteristic vehicle damage* (<https://katalog-poskozeni.cz/en>). Working together with the Transport Research Centre as a project partner and sharing knowledge with a specialist in the field (such as experts in the field of crash analysis and the police), we hopefully maximise the likelihood of that knowledge being transferred into practice. The project was conducted in cooperation of Transport Research Centre and the Faculty of Mechanical Engineering at BUT. Project details are available at: <https://starfos.tacr.cz/en/projekty/CK02000084?query=qh4iaadfnola>.

- **The new methodology of traffic accident scene investigation in the terms of police activity in the Czech Republic** (Ministry of the Interior of the Czech Republic - Programme of Security Research in the Czech Republic; 2020 - 2022)

As a methodological workplace in accident analysis, the institute's mission also includes innovating accident documentation procedures. The goal of the project was to innovate procedures of Czech police for gaining and analysing of information during the investigation of traffic accident scene. The methods of data collection and documentation of accident scene that could be used for time and cost optimisation of police activity will be experimentally verified. There were created the preconditions for elimination of economic and ecological loss

caused by road closures or traffic congestion as well. The project results were also transferred into practice through the methodology and also amendment of the Internal Act of the Czech police.

Project details are available at:

<https://starfos.tacr.cz/en/projekty/VI20202022144?query=wk5iaadnproq>.

- **The Development of device for unrecognizable brake traces identification** (Ministry of Industry and Trade of the Czech Republic, 2018 – 2021)

The institute's mission and vision aim to not only streamline but also innovate the entire accident documentation process, which was the core objective of this project. The project focused on researching, developing, prototyping, and verifying the parameters of a new Road-Trace device designed to detect rubber residues and trace elements on road surfaces. The device was based on the Laser-Induced Breakdown Spectroscopy (LIBS) analytical method. The project built upon previous applied research focused on diversifying the application of LIBS spectroscopy across various industries, aligning with the global strategy of AtomTrace a.s. The project was conducted also in cooperation with the Faculty of Mechanical Engineering at BUT. Project details are available at:

<https://starfos.tacr.cz/en/projekty/FV30224?query=qabyaadn4hhq>.

- **Estimation of capitalization rate (cap rate) for specific real estate's according to an analogous investment based on financial markets** (Technology Agency of the Czech Republic; 2021 - 2022)

In line with the institute's mission to advance forensic sciences, including in the field of real estate evaluation, the main goal of the project was to develop a tool for determining the capitalisation rate (cap rate) in real estate valuation when market data for the relevant segment is unavailable, making conventional valuation approaches unfeasible. Despite this, such valuations still need to be conducted. According to the International Valuation Standards (IVS), the "built-up method" is an acceptable approach in such cases, provided it is constructed correctly and based on transparent financial market data. The proposed tool will enable a transparent and reliable estimation of the cap rate, addressing challenges posed by the complete lack of market data and accounting for local differentiation. This will not only resolve issues tied to data scarcity but will also significantly enhance transparency in real estate valuation practices. The project was conducted in cooperation with the Faculty of Electrical Engineering and Communication at BUT, and the Masaryk University. Project details are available at: <https://starfos.tacr.cz/en/projekty/TL05000072?query=4ljaaadndq2q#project-main>.

- **Reduction of the fine particles concentration with using active temperature stabilisation in the flue gases of small sources** (Technology Agency of the Czech Republic; 2018 - 2019)

The benefit of this project to the institute's mission and vision lies in the development of innovative solutions for reducing fine particle concentrations, contributing to both environmental safety and risk engineering. The project's aim was to develop new types of filters for the arsenic (As) removal from water. The grant enabled young scientists to solve attractive issue from preparation of active synthetic materials by modern technologies, through the development of methodologies for analytical control of as removal, up to construction of a device that was tested on a real water. The output of the project was the creation of a functional sample for the thermal stabilization of the furnace providing suitable conditions for better combustion of volatile combustibles released from the fuel. The results of the project were also published in professional journals and presented at international conferences. The project was solved in cooperation with the Faculty of Mechanical Engineering at BUT, and the Tomas Bata University in Zlín.

Project details are available at: <https://starfos.tacr.cz/en/projekty/TJ01000331#project-main>.

- **Increasing the level of OSH management in workspace with occurrence of fine and ultra fine particles** (Technology Agency of the Czech Republic; 2019 - 2021)

The benefit of this project to the institute's mission lies in the development of a comprehensive methodology for assessing and improving occupational safety and health (OSH) management in environments with fine and ultra-fine particles. This research not only advanced technical forensic science but also addressed gaps in existing methodologies by considering the psychological and economic aspects of employee well-being. The aim was to create a methodology that focused on the complex assessment of the OHS management system, increasing its standard and effectiveness in places containing particles smaller than 2.5µm. At the time, methodologies and approaches were in place for risk evaluations related to employees' health and safety, but they did not take into account employees' psychology (safety level perception, well-being, attention, performance, etc.) or consider possible subsequent risks (impact on business operations and the economy). The implementation of the proposed methodology was planned to take place within three years after the project's completion. The findings were incorporated into lessons related to the subject at BUT. The main objective of the project was to create a teaching methodology for the development of the performer's communication skills in persuasion. The teaching methodology consisted of documented and well-defined procedures aimed at increasing the persuasion of the performer towards the recipient. The proposed methodology was based on the analysis of physiological parameters of both the performer and the recipient and was therefore expected to be more effective than conventional methods. The second objective of the project was to develop a software tool for assessing the effectiveness of persuasion. The efficiency of persuasion was evaluated by analyzing the biological signals measured simultaneously from both the performer and the recipient during their interaction. Project was solved in cooperation with the Faculty of Electrical Engineering and Communication at BUT, Theatre Faculty of the Janáček Academy of Performing Arts, and the Faculty of Arts of the Masaryk University. Project details are available at: <https://starfos.tacr.cz/en/projekty/TJ02000293>.

- **Risk management plan for selected critical facilities of transportation infrastructure** (Technology Agency of the Czech Republic; 2020 - 2022)

The project was, in line with the Institute's mission, focused on risk management and aimed to set up risk management plans for critical elements of transport infrastructure (TI), which allowed maintaining TI safety at the demanded level and, by doing so, ensured its safety and sustainability. Plans were developed for bridges, tunnels, bus and railway stations, airports, and traffic control systems based on current knowledge, real data on failures and accidents of elements, and data on responses to significant risks of all kinds, including the responsibility for implementation. For each item, the type of risk management plans (RMP) and site-specific RMP as examples were developed. A proposal for the Road Law supplement and a methodology for public administration with guidelines for processing the site-specific RMP were also elaborated. Project was solved with close multidisciplinary cooperation with the Institute of Railway Structures and Constructions of the Faculty of Civil Engineering at BUT. The main project's result was Methodology for developing a risk management plan for selected transport infrastructure items, certified by the Ministry of Transport of the Czech Republic.

Project details are available at:

<https://starfos.tacr.cz/en/projekty/CK01000095?query=43yqaadnslsa#project-main>.

Table 3.3.1 – Projects supported by public funds

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
Technology Agency of the Czech Republic	Standards for the performance of expert activities in assessing the course and causes of traffic accidents			495/19.5	1109/43.7	953/35.6
Ministry of the Interior of the Czech Republic	The new methodology of traffic accident scene investigation in the terms of police activity in the Czech Republic		2,295/90.5	2,323/91.6	437/17.2	
Technology Agency of the Czech Republic	Estimation of capitalization rate (cap rate) for specific real estate's according to an analogous investment based on financial markets			312/12.3	479/18,9	
Technology Agency of the Czech Republic	Complex physiological monitoring of the driver with respect to psychological factors affecting driving behaviour	967/38.1	917/36.2			
Technology Agency of the Czech Republic	Risk management plan for selected critical facilities of transportation infrastructure		514/20.3	658/26.0	627/24.7	
Technology Agency of the Czech Republic	Increasing the level of OSH management in workspace with occurrence of fine and ultra fine particles	754/29.7	641/25.3	667/26.3		
Technology Agency of the Czech Republic	Reduction of the fine particles concentration with using active temperature stabilisation in the flue gases of small sources	448/17.7				
Total		2,209/87.1	4,367/172.3	4,455/175.7	2,652/104.6	953/37.6
In the role of another participant						
Provider ²⁷	Project name	Support (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
Ministry of Industry and Trade of the Czech Republic	Development of equipment for identification of trace elements of the brake track	1,009/39.8	1,154/45.5	47/1.9		
Technology Agency of the Czech Republic	Modern methods of vehicle deformation			927/36.6	1,017/40.1	1,096/43.2

²⁵ If the provider is from abroad, please indicate the provider's country of origin in brackets. For the determination of the country of origin of the provider, the place of residence of the provider is decisive.

²⁶ Indicate the total amount expressed in thousands of CZK and the conversion of the total amount into Euro.

²⁷ Ibid.

	documentation and analysis					
Technology Agency of the Czech Republic	Nanostructured filtration materials for elimination of arsenic in water	247/9.7	210/8.3	16/0.6		
Total		1,256/49.5	1,364/53.8	990/39.0	1,017/40.1	1,096/43.2

Table 3.3.2 – Contract research activities

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
Road and Motorway Directorate of the Czech Republic	Technical prerequisites for the removal of road obstacles	625/24.7				
Road and Motorway Directorate of the Czech Republic	Technological procedures for extrication of trucks after a traffic accident		65/2.6	270/10.7	140/5.5	
Governing Office of South Moravian Region	Methodology of brief valuation of damage caused by tornado			809/31.9		
Czech Insurers' Bureau	Expert's standard for valuation of motor and special vehicles			1,244/49.1		
Ministry of Defence of the Czech Republic					1,595/62.9	1,579/62.3
Total		625/24.9	65/2.6	2,323/91.6	1,735/68.4	1,579/62.3

Note: List and describe contract research activities with a revenue in a given calendar year, regardless of the amount of financial revenue.

3.4 Research results with existing or prospective impact on society

The evaluated unit shall briefly comment on a maximum of 10 (considered most significant by the evaluated unit) research results already applied or realistically heading towards application during the period of 2019–2023, based on the overview annex table 3.4.1 (it is recommended to indicate results with a link to projects listed in indicator 3.3). The evaluated unit must demonstrate in its description that the research results have led or will soon lead to positive impacts²⁹, on society (e.g. description of how the results are used by various users, the range of persons/institutions for which the result is relevant, measurable economic impacts, etc.). The evaluated entity shall indicate in its commentary whether the gender dimension is considered in these results and discuss the impacts of the results regarding sustainability. *Maximum range 300 words/result.*

IFE strategy reinforces IFE's effort in the social and economic impact of its operation. Corresponding with each IFE's main areas of operation, i.e. transportation and traffic accidents (including damage valuation), construction and real estate valuation, and risk engineering, research outcomes and

²⁸ If the client is from abroad, indicate in brackets the country of origin of the client.

²⁹ See Terms definition.

engagement activities directly influence society, industry, and policy in various ways such as creation and Validation of Standards and Methodologies. Creation, innovation, and validation of methodologies and standards improve legal certainty, enhance safety, and influence professional practices. With the aim of cultivating forensic expertise, books and chapters in thematic books have been also produced. IFE results have direct application potential and are widely used by e.g. the Police of the Czech Republic, the Ministry of Defence of the Czech Republic, public authorities, road administrators, recovery companies, integrated rescue units or insurance companies and experts in given fields.

Key results:

- **Transportation and Traffic Accidents:**

- **The Methodology for Investigating the Scene of a Traffic Accident (Methodology, 2022)**, is a certified methodology and internal act of the Police of the Czech Republic, significantly improving accident documentation. It addresses challenges such as the inability of investigators to fully utilize new technologies and capture all necessary evidence, strengthening legal outcomes in complex cases. The proposed methodology was experimentally verified, methods and procedures were defined to ensure time and cost optimization of the Police of the Czech Republic. The output also creates the prerequisites for the elimination of economic and ecological losses caused by road closures. The methodology was conceived and verified within the project **The new methodology of traffic accident scene investigation in the terms of Police activity in the Czech Republic**.
- **The Vehicle Damage Catalogue (Specialised database, 2022)**, is a specialized licensed database provides standardized damage data, which aids experts, insurers, and repair shops in consistent assessments and helps reduce disputes in insurance claims. The fundamental basis for road crash analysis is a precise and sufficiently detailed examination of the crash scene, including the involved vehicles and their damage. Only a high-quality crash analysis can lead to the correct determination of the cause of the crash. In contrary, the inaccuracy of the input data affects the accuracy of the resulting analysis of the accident event, and an incorrect analysis of the crash event can lead to an incorrect conclusion regarding the cause of a particular crash and also incorrect determination of the culprit. Crash analysis requires evaluating the adequacy and correspondence of vehicle damage based on available evidence and data sources. In cases of less common collisions, such as those involving different transport modes or high/low-speed impacts, data sources are often limited, and expertise is lower due to the rarity of such events, increasing the risk of misjudgement. This underscores the importance of reliable data, such as crash test data or real traffic accident databases, for accurate accident analysis. The database was created based on the comprehensive analysis of our own conducted crash tests. However, the catalogue not only contains data from our crash test but is appropriately supplemented with data from real road crashes and experiments. The database was created within the project **Modern methods of vehicle deformation documentation and analysis**.
- **The Expert Standard No. 1/2022 (Standard, 2022)**, Valuation of Road and Special Vehicles clarifies and unifies the approaches to vehicle valuation. The standard also methodologically leads experts to the correct differentiation of the results of market analyses and expert assessments when assessing the amount of property damage. For the purposes of these assessments, the standard also sets out the minimum recommended content of an expert's report, so that, particularly in the performance of expert activities, the completeness and reviewability of the assessments carried out are ensured, in accordance with the Act on Experts, Expert Offices and Expert Institutes. Clarifying and unifying approaches to valuation enhancing legal certainty and decision-making practise. Prior the Standard conceptualization, numerous disputes arose in relation to the assessment of the impairment of repaired vehicles. This

standard, developed based on extensive research, has significantly reduced disputes concerning vehicle impairment due to repairs. The result arose as part of the aforementioned **contract research Expert's standard for valuation of motor and special vehicles for the Czech Insurers' Bureau**.

- **The Road Traffic Accidents Reconstruction Standard (Standard, 2023)**, supports expert witnesses in providing reliable reconstructions of road traffic accidents, enhancing the quality and transparency of expert testimony in legal proceedings. The standard also establishes requirements for the competence of the expert and his responsibilities in the preparation of the accident analysis. The Standard was one of the results of the aforementioned project **Standards for the performance of expert activities in assessing the course and causes of traffic accidents**.
- **Technical prerequisites for the removal of road obstacles and Technological procedures for extrication of trucks after a traffic accident (Standards, 2023)**: The socioeconomic losses associated with traffic crashes are also related to the duration of road restrictions or closures and the level of safety provision. The duration of the congestion has a direct impact on the amount of damage - each hour of traffic restriction means damages of several million CZK. The basic technical parameter, i.e., the speed of removal of the traffic obstruction, together with the very high risk of working on the motorway, requires reconciling the counterproductive requirement of the speed of works with the rules of safety of work on motorways to achieve maximum efficiency to achieve smooth operation. It was therefore necessary to define standards that define procedures for removing obstacles on highways and managing the aftermath of traffic accidents. These standards enhance road safety and improve response efficiency, reducing traffic disruptions and associated costs. Within the projects (contract research for the Road and Motorway Directorate of the Czech Republic - Technical prerequisites for the removal of road obstacles and Technological procedures for extrication of trucks after a traffic accident) were developed Standards for Removing Obstacles on Highways and also Standards for Towing Services. The establishment of basic rules for towing services improves the technological processes for traffic obstacle removal, further supporting traffic flow and safety on highways. The standards are also intended for road managers to set effective parameters for public tenders of companies focused on the removal of obstacles on selected sections of roads. At the same time, the methodology is intended for all applicants to cooperate with road managers to properly set the capacity of special equipment and special equipment and the capacity of qualified, professional staff.
- **Construction and Real Estate Valuation:**
 - **The Capitalization Rate: Web Calculator (Web application, 2023)**, is an innovative tool designed for the real estate sector. It provides a modern approach to estimating property capitalization rates using financial market data, aligning with the International Valuation Standards. This tool assists real estate professionals in making more accurate valuations, offering an alternative to traditional methods. The application contributes to the refinement of the valuation of such properties where the valuation is not possible to implement with the use of traditional methods due to data limitations, so contribute also to greater transparency of the valuation process. The application was created within the project **Estimation of capitalization rate (cap rate) for specific real estate's according to an analogous investment based on financial markets**
- **Risk Engineering and Environmental Protection:**
 - **The Methodology for Increasing the Safety of the Working Environment Loaded with Particles < 2.5 µm (Methodology, 2021)**, is a certified approach that improves workplace safety by mitigating exposure to hazardous fine particles. The methodology includes also the assessment of risks associated with the exposure of workers and the rate of perception of risks by employees in the field of information about the risks associated with fine and ultrafine particles. In the case of risk assessment of these particles, it is not only a matter of health risks associated

with direct exposure to these particles but can have negative effects on mental health of employees. The methodology reflects the development of new technologies and related necessity of the innovation of requirements for safety and health at workplaces. One of these sectors are also industrial plants which process or use fine and ultrafine particles ($<2.5 \mu\text{m}$) during their activities or where these particles are created unintentionally as a by-product of the production. The methodology was created within the project Increasing the level of OSH management in operations with the occurrence of fine and ultra-fine particles.

- **The Nanostructured Material for the Elimination of Arsenic from Water and the Combined Filter Containing Nano-Structured Material and $\text{FeO}(\text{OH})$ (functional samples, 2019)**, are functional samples developed by IFE to address water contamination, significantly contributing to environmental safety. The solution consists of a combination of nanostructures prepared by electrospinning and sorption materials, e.g., iron hydroxi-oxides. such device could serve not only for the treatment of as contaminated drinking water, but also to eliminate environmental burdens. The functional samples were created within the project Nanostructured filter materials for arsenic removal from water.
- **The Active Temperature Stabilization System (functional sample, 2019)**, is designed to reduce the concentration of fine particles in the flue gas of small biomass sources, directly addressing environmental pollution and improving air quality. The result was created within the project Reduction of fine particle concentration in flue gases from small sources using active temperature stabilization based on the continuous monitoring and results of the tests of parameters affecting the combustion of biomass in small sources. The analysis of the results was used for the assessment of health risks in connection with the IFE mission and also for further development in this area.

Through its research and outreach, IFE not only advances forensic engineering but also plays a critical role in improving public safety, enhancing legal frameworks, and contributing to environmental sustainability, with considering the gender aspects in research teams, but also in research topics. Its achievements have a profound impact on society, industry, and policy both within the Czech Republic and internationally.

Table 3.4.1 – Overview of research results in the period under evaluation

Type of result ³⁰	Year of application	Name
methodology	2022	The Methodology for Investigating the Scene of a Traffic Accident is a certified methodology and internal act of the Police of the Czech Republic
specialized database, licenced	2022	The Vehicle Damage Catalogue
standard	2022	The Expert Standard No. I/2022 - Valuation of Road and Special Vehicles clarifies and unifies the approaches to vehicle valuation
standard	2023	The Road Traffic Accidents Reconstruction Standard
standard	2023	Standards for Removing Obstacles on Highways
standard	2023	Standards for Towing Services
standard	2023	The Capitalization Rate: Web Calculator
methodology	2021	The Methodology for Increasing the Safety of the Working Environment Loaded with Particles $< 2.5 \mu\text{m}$
functional sample	2019	The Nanostructured Material for the Elimination of Arsenic from Water and

³⁰ Specify the specific type of result. Add rows as needed.

functional sample	2019	The Combined Filter Containing Nano-Structured Material and FeO(OH)
functional sample	2019	Active temperature stabilization system for reducing the concentration of fine particles in the flue gas of small biomass sources

Note 1: Please list and describe the results already applied in practice or heading towards application in practice with existing or prospective impact on the society (e.g. domestic or foreign patents, sold licenses, spin-offs, prototypes, varieties and breeds, methodologies, significant analyses, surveys, expert outputs for policymaking or other forms of non-publication outputs, etc.). Indirect results of research, development and creative activities with documented societal impact, e.g. expert activities, services to the public/government/scientific community, may also be reported.

TRANSFER OF RESULTS INTO PRACTICE

3.5 Transfer of results into practice

The evaluated unit shall briefly describe its system for transferring results into practice. It shall also indicate up to five of the most typical users of its results, whether in the university environment or in the non-university application/corporate sphere, detailing how it collaborates with them and how it seeks out new users (using a maximum of five specific examples).

It will also indicate whether and how it commercialises R&D&I results (e.g. selling licences, setting up start-up or spin-off companies, etc.)³¹, providing brief description of the commercialisation methods used. The effectiveness of the transfer of results and the commercialisation of R&D&I results will be described using a selection of results (max. five) listed in annex table (Table 3.4.1).³²

Additionally, the evaluated unit shall briefly comment on the funds received during the period of 2019–2023 from non-public, non-grant sources (e.g. licences sold, spin-off revenues, donations, etc.). A full summary shall be provided in annex table (Table 3.5.1).

Maximum 500 words plus 200 words for each provided example of finding a new user of results and commercialization.

Self-assessment:

The **Institute of Forensic Engineering (IFE)** at **Brno University of Technology (BUT)** employs a structured system to translate its research outcomes into practice. This involves collaboration with key stakeholders in academia, industry, and public administration. IFE's system emphasizes the practical application of forensic engineering methodologies, standards, and innovations, ensuring their adoption by professional practitioners and industries, but primarily for law enforcement agencies, the judicial apparatus, police and other investigative forces. The knowledge transfer mechanism is set centrally at the university level through the Department of the Knowledge Transfer.

Key stakeholders:

- Ministry of Justice - the Institute serve as consultant for the Ministry of Justice on the legal and sub-legal regulation of expert activities in the Czech Republic;
- Police of the Czech Republic (Methodologies for accident scene documentation and vehicle damage assessment);
- Experts: methodologies and standards;
- Insurance companies: Vehicle repair cost assessment, painting technology comparisons, and valuation of damages;

³¹ In the case of military HEIs, their specific position is taken into account when evaluating the commercialisation/evaluation of R&D&I results.

³² If the commercialisation of R&D&I results is carried out in this way.

- Road and Motorway Directorate of the Czech Republic (Development of technical prerequisites for highway maintenance and towing);
- Škoda Auto: Innovations in crash analysis and safety testing.

Expanding Collaboration and Identifying New Partners:

- Engagement with public administration and research institutions – IFE actively collaborates with national authorities such as the Ministry of Justice, the Ministry of Transport, and the Police of the Czech Republic, ensuring direct application of research in policymaking and forensic practices. Partnerships with Czech universities (e.g., the Czech Technical University in Prague, the Masaryk University, the Technical University of Ostrava) and research institutes (e.g., the Transport Research Institute, the Institute of Criminalistics of the Police of the Czech Republic) further enhance interdisciplinary cooperation and research impact.
- International research partnerships – The institute strengthens its global presence through participation in programs such as Horizon Europe, COST Action, NATO SPS, and the International Visegrad Fund, alongside developing bilateral collaborations with universities and research organizations in the V4 countries, Austria, USA, Israel, and Germany.
- Industry and private sector cooperation – IFE seeks partnerships with companies in forensic technology, risk management, transportation, and real estate valuation to translate research into practical applications. Collaborations include joint research projects, expert consulting, and development of industry-driven solutions.
- Active participation in professional networks and conferences – IFE expands its collaboration base by engaging in international professional associations, expert committees, and conferences (e.g., WREX, ExFoS), fostering long-term research partnerships and knowledge exchange.
- Development of spin-offs and start-ups – The institute promotes commercialization of research outcomes through technology transfer, intellectual property protection, and support for spin-off companies, creating pathways for innovation-driven entrepreneurship within forensic engineering and related disciplines, as a highest results of applied research and commercialisation of the research results.

Commercialisation of R&D&I Results:

- Experts reports and reviews (such as the expert opinions: Cause of the fall of the cable car on Ještěd mountain, Valuation of damage caused by tornado, Cause of the crash of the trolleybus and tram in the Brno city, Numerous insurance frauds, The fatal crash caused by the drunk and banned driver – intentional general endangerment, The Valuation of Special Purpose Vehicles, Fatal crash with Police car, etc.) for legal and governmental authorities of the Czech Republic, together with insurance and experts' authorities and boards.
- Licences sold: IFE commercialized its Vehicle Damage Catalogue, a specialized database for crash analysis, eliminated disputes over vehicle repair costs through standardized damage data.
- Monography Vehicle Crush Investigation: A Guidebook to Documentation and Analysis is sold mainly to experts and professionals in the field of road accident analysis.
- IFE is also conducting research projects in cooperation with RCE company focused on using artificial intelligence and collaborative drones to improve traffic safety. Among other things, a functional prototype will be developed, and the project result is expected to have commercial applications, particularly in monitoring hazardous behaviour in road traffic.

Income from the provision of professional and consultancy expert services is shown in Table 3.5.1. These figures show an overall increase in revenue of 38% over the period 2019-2023.

Table 3.5.1 – Summary of non-public revenues received during the period under evaluation

Type of revenue	Revenue (in thousands CZK/EUR)				
	2019	2020	2021	2022	2023
Expert's witness activity for public authorities	2,639/104.6	3,142/124.5	2,073/82.2	2,646/104,9	3,528/139,9
Expert's witness activity for private sector	799/31.6	724/28.7	408/16.2	638/25,3	688/27.3
Technical and economic advisory activity	95/3.7	0/0	38/1.5	149/5.9	707/28.0
Technical and economic reports	24/0.9	136/5.4	0/0	60/2.38	0/0
Total	3,557/141.0	4,002/158.6	2,519/99,9	3,493/138,7	4,923/195.2

Note: Enter funds raised for R&D&I from non-public sources besides grants or contract research (e.g. licences sold, spin-off company revenues, donations, etc.) in the calendar year.

POPULARIZATION OF VAVAI

3.6 The most important activities in the field of popularization of R&D&I and communication with the public

The evaluated unit shall briefly describe its main activities related to the popularisation of R&D&I and communication with the public (e.g. popularisation lectures, citizen science initiatives, etc.) during the period of 2019–2023 and provide up to 10 examples that it considers the most significant.

Maximum 500 words plus 200 words for each example given.

Self-assessment:

The Institute of Forensic Engineering (IFE) at Brno University of Technology actively engages in the popularisation of research, development, and innovation (R&D&I), striving to make forensic engineering accessible and relatable to the public. Through educational events, public demonstrations, and media presence, IFE bridges the gap between scientific advancements and societal understanding.

Key Popularisation Activities:

Conferences, Workshops, and Public Engagement: IFE is deeply involved in organizing and participating in conferences and workshops that enhance professional qualifications and knowledge transfer in forensic engineering:

- Since 1992, IFE has been organizing the [ExFoS \(Expert Forensic Science\) Conference](#), an international conference focused on expertise, risk engineering, and security in technical and economic areas, serving as a platform for knowledge exchange among experts.
- In collaboration with the Tomas Bata University in Zlín, IFE co-organized the [CRISCON](#) conference in Zlín, creating a space for the latest theoretical and practical knowledge in crisis and risk management.
- IFE co-organized [WREX 2023 in the USA](#), focusing on research in crash tests, enhancing the qualifications of experts in accident assessment and automotive safety

Crash Tests: IFE's annual Crashday is a unique event in the Czech Republic, involving real-life crash tests, lectures, and demonstrations. These crash tests serve multiple purposes: they provide data for research, verify crash documentation methodologies, and offer a platform for knowledge sharing among professionals and the public (some of examples available at crashday.cz/nase-prace/, [ÚSI pořádá nárazové zkoušky CrashDay 2020 - Aktuality – VUT](#), for media coverage see e.g.:

- [VIDEO: Ze tří aut zbyl jen šrot. Univerzita simulovala bouráčky kvůli vědě - iDNES.cz](#),
- https://www.idnes.cz/auto/zpravodajstvi/crashtest-dopravni-nehoda-analyza-testovaci-nehoda-crash-day-ostrovacice.A180914_190527_automoto_fdv;

- <https://znalci.sk/crash-testy-2020/>; Crash testy pomáhají expertům - 24. září 2020 - Události v regionech (Brno) | Česká televize;
- ceskenoviny.cz/index_img.php?id=463515;
- [Vědci se snaží lépe analyzovat průběh nehod, pomáhají crashtesty - iDNES.cz](https://www.idnes.cz)).

IFE also participated on events focused on road safety (such as Motorcycle safety action “Nežij vteřinou”, Motosalon etc.) or science popularization (such as Researchers’ Night, Kopřivnické dny techniky, BUT Junior). The Researchers’ Night (<https://www.nocvedcu.cz/organizace/vysoke-uceni-technicke-v-brne>) is nationwide annually co-organized event since 2015 focused on the science and technology popularization. Visitors from public pass-through laboratories, IFE traditionally prepares interactive demonstrations such as simulator driving, perception under alcohol influence or real-world crash test. VUT Junior (vut.cz/junior) is a BUT project focused on pupils of elementary schools and junior high schools aimed to introduce the BUT environment and study facilities and mainly motivate students for studying STEM. Annually, IFE host over 50 students and prepare diverse program and educational process at IFE laboratories. Kopřivnice Days of Technology (<https://koprivnickednytechniky.webnode.cz/>) is an event for the public, the participation of IFE in this region brings not only the popularization of science, but also the promotion of study programs in the region where the automotive industry has a tradition. IFE also traditionally participated on the professional fairs such as MSV International Engineering Fair (<https://www.bvv.cz/en/msv>; e.g., [Roboty ovládly stánek VUT na Mezinárodním strojírenském veletrhu v Brně - Aktuality – VUT](https://www.bvv.cz/en/msv)).

The selected IFE activities and results are also promoted on social networks, mainly [Facebook](https://www.facebook.com) and [Instagram](https://www.instagram.com).

The importance of the IFE's activities is demonstrated also by the media coverage:

- mainly expert opinions in complex cases such as:
 - fall of cable car on Ještěd mountain (available at https://www.idnes.cz/liberec/zpravy/pad-lanovky-jested-kabina-pruvodci-vysetrovani-smrt-turismus.A230421_721228_liberec-zpravy_lav; Uplynul rok od tragického pádu lanovky na Ještědu. Vyšetřování stále není uzavřené)
 - the crash of the trolleybus and tram in the Brno city (available at <https://www.brnan.cz/udalosti/vysetrovani-nehody-trolejbusu-v-brne-trva-ceka-se-na-posudky>),
 - fatal crash analysis (available at [Tragická nehoda u Nesovic podle počítače. Podívejte se, co se stalo - Vyškovský deník](https://www.vyskovskydenik.cz))
- also the innovations developed at IFE such as Vehicle Damage Catalogue (available at <https://ekonomickydenik.cz/novy-nastroj-na-analyzu-nehod-ma-pomoci-znalcum-policistum-i-pojistovnam/>), or RoadTrace Device for the detection of the invisible brake traces (available at https://www.idnes.cz/brno/zpravy/pristroj-vysetrovani-nehody-neviditelne-stopy-pneumatik-atomtrace.A210113_589172_brno-zpravy_krut)
- or popularization activities (such as CrashDay – see details in the previous sections).

IMPLEMENTATION OF RECOMMENDATIONS

3.7 Implementation of the recommendations in Module 3

The evaluated unit will briefly describe how it has implemented the recommendations for Module 3 from the previous evaluation period, if applicable.

Maximum 1000 words.

Self-assessment:

Following the recommendations from the previous evaluation period, the Institute of Forensic Engineering (IFE) has undertaken several measures to address the suggested areas for improvement and further enhance its performance:

1. **Strengthening Collaboration with Other Faculties and Institutions:** IFE has intensified cooperation with other faculties of Brno University of Technology (BUT) – namely the Faculty of Chemistry, the Faculty of Mechanical Engineering, the Faculty of Electrical Engineering and Communication (namely the Institute of Biomedical Engineering), and the Faculty of Civil Engineering (see also part research projects); and external institutions. Collaborative efforts have been integrated into research projects, such as the **Artificial Intelligence and Collaborative Drones for Traffic Safety** project, implemented in cooperation with the private sector (e.g., RCE company). Additionally, stronger ties have been established with foreign partners, as demonstrated by the co-organization of the **WREX 2023** conference, the world's largest event for accident analysts. IFE is also actively pursuing partnerships for international projects (e.g., INTERACTION, COST, CEEPUS, NATO SPS, International Visegrad Fund, Danube Strategy Fund, HORIZON).
2. **Increasing Revenues from Non-Public Sources:** IFE has expanded its contract research activities and engaged more actively with industry stakeholders. This has led to higher revenues from private sources (table 3.5.1), particularly through expert witness services and tailored projects with direct applications in forensic and engineering practices. IFE has also worked to secure provisions in applied research contracts to ensure a share of revenues associated with the commercialization of results.
3. **Enhancing Socio-Economic and Non-Economic Impact:** IFE has focused on producing outputs with both economic and non-economic impacts. These include the development and application of new methodologies, standards, and tools, such as the **Vehicle Damage Catalogue** and **Capitalization Rate Web Calculator**, which have improved transparency and consistency in forensic and real estate valuations. These outputs are applied in practice and contribute to public safety and legal certainty.
4. **Developing Technology Transfer and Commercialization Systems:** While IFE's capacity is limited by its size, it has made strides in exploring technology transfer mechanisms, including the potential for establishing spin-offs. The Institute has adopted BUT's centralized guidelines on creating spin-off and start-up companies and is integrating these principles into its strategy. Efforts also include raising awareness of the **Methodology for Evaluating Research Organisations and Research, Development, and Innovations Purpose-Tied Support Programmes (M17+)**.
5. **Improving Innovation and International Recognition:** IFE has worked to raise its profile both domestically and internationally. Its outputs and expertise have gained wider recognition through events like the **ExFoS Conference**, and international research collaborations, such as BOKU - University of Natural Resources and Life Sciences, University of Krems, Austria (logistics); Ariel University, Israel (human factors in transportation and related challenges of autonomous mobility); the University of Colorado Boulder, USA (vibrations and fast events); Esslingen University, Germany (vector collision analysis). These initiatives aim to enhance IFE's visibility and reputation while contributing to innovation in the field.
6. **Strategic Development and Continuous Improvement:** The establishment of the International Scientific Advisory Board (ISAB) has helped IFE identify its strengths and

weaknesses and develop strategies for improvement. The board provides critical insights to align IFE's research and innovation goals with both institutional and societal needs.

By addressing these recommendations, IFE has successfully built upon its strengths, addressed identified gaps, and positioned itself as a key player in the fields of forensic engineering and applied research.

IFE has demonstrated significant progress in aligning its research activities with societal and industrial needs, particularly in forensic engineering, real estate valuation, and risk management. As a key methodological workplace in the Czech Republic, the institute has successfully developed and implemented high-impact applied research, influencing legal certainty, accident reconstruction, and infrastructure risk assessment. However, despite these achievements, further improvements are needed in expanding international collaborations, increasing interdisciplinary cooperation, and enhancing commercialization efforts.

The institute has taken concrete steps to strengthen collaboration within the Brno University of Technology (BUT) by linking research activities across faculties and involving researchers at various career stages. This interdisciplinary approach fosters synergy within the university and supports larger, multidisciplinary research projects. Notable examples include knowledge transfer within the Artificial Intelligence and Collaborative Drones for Traffic Safety project in cooperation with RCE and previous projects such as the development of LIBS-based equipment for detecting indistinct traces on roads. Despite these advancements, challenges remain in scaling up collaboration to maximize funding opportunities and applied research outcomes.

IFE's international engagement has expanded significantly, as demonstrated by its co-organization of WREX 2023, the world's largest accident analysis conference. The institute has also intensified its involvement in securing Horizon Europe, COST Action, NATO SPS, and the International Visegrad Fund projects, while bilateral proposals are under preparation with partners from the USA, Israel, and Germany. These initiatives highlight IFE's commitment to internationalization and cross-border research, though continued efforts are required to successfully secure and implement these projects at an international level.

Regarding knowledge transfer and commercialization, IFE has adopted BUT's framework for establishing spin-offs and start-ups, aiming to create sustainable pathways for innovation-driven entrepreneurship. While initial steps have been taken to increase awareness of the Methodology for Evaluating Research Organisations and Research, Development, and Innovations Purpose-Tied Support Programmes (M17+), a more structured approach to technology transfer and intellectual property protection could further enhance the economic impact of research outputs. Particular attention is being given to ensuring that applied research contracts include provisions for revenue-sharing linked to commercialization.

To further strengthen both IFE and BUT, the International Scientific Advisory Board (ISAB) was established, providing strategic guidance, identifying strengths and weaknesses, and aligning research goals with institutional and societal needs. While ISAB has contributed valuable insights, IFE must continue translating these recommendations into actionable strategies for long-term sustainability and competitiveness.

Conclusion

While IFE has made notable improvements in research excellence, internationalization, and commercialization, ongoing refinements are necessary, particularly in enhancing multidisciplinary collaboration, securing long-term international partnerships, and scaling commercialization efforts.

By addressing these areas, IFE can solidify its position as a leading research institution both within the Czech Republic and internationally.

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)
Project <i>Complex physiological monitoring of the driver with respect to psychological factors affecting driving behaviour</i> most valuable results	3.3	- Article J_{imp}: https://starfos.tacr.cz/en/vysledky-vyzkumu/RIV%2F00216305%3A26220%2F20%3APU135930 - Article J_{imp}: https://starfos.tacr.cz/en/vysledky-vyzkumu/RIV%2F61989592%3A15210%2F20%3A73600827
Project <i>Modern methods of vehicle deformation documentation and analysis</i> most valuable results	3.3	- E-book <i>Vehicle Crus Investigation</i>: https://shopcdv.cz/en-en/products/vehicle-crush-investigation-a-guidebook-to-documentation-and-analysis - <i>Damage Catalogue</i>: https://katalog-poskozeni.cz/en/
Project <i>The new methodology of traffic accident scene investigation in the terms of police activity in the Czech Republic</i> most valuable result	3.3	- Approved methodology for documenting the place of a traffic accidents: https://starfos.tacr.cz/en/vysledky-vyzkumu/RIV%2F00216305%3A26610%2F22%3APR36286
Project <i>The Development of device for unrecognizable brake traces identification</i> most valuable results	3.3	- Prototype device for identifying brake marks on the road: https://starfos.tacr.cz/en/vysledky-vyzkumu/RIV%2F03396916%3A%2F21%3AN0000001
Project <i>Estimation of capitalization rate (cap rate) for specific real estates according to an analogous investment based on financial markets</i> most valuable results	3.3	- Web capitalization rate calculator: https://starfos.tacr.cz/en/vysledky-vyzkumu/RIV%2F00216305%3A26610%2F23%3APR37534 - Article J_{imp} - <i>Improved interexceedance-times-based estimator of the extremal index using truncated distribution</i>: https://starfos.tacr.cz/en/vysledky-vyzkumu/RIV%2F00216305%3A26110%2F22%3APU144888
Project <i>Reduction of the fine particles concentration with using active temperature stabilisation in the flue gases of small sources</i> most valuable results	3.3	- Functional sample <i>Active thermal stabilization system for reducing the concentration of fine particles in the flue gases of small biomass sources</i>: https://starfos.tacr.cz/en/vysledky-vyzkumu/RIV%2F00216305%3A26610%2F19%3APR32591
Project <i>Increasing the level of OSH management in workspace with occurrence of fine and ultra fine particles</i> most valuable results	3.3	- Software tool for biosignal analysis: https://starfos.tacr.cz/en/vysledky-vyzkumu/RIV%2F00216305%3A26220%2F21%3APR34426

Project <i>Risk management plan for selected critical facilities of transportation infrastructure</i> most valuable results	3.3	- Methodology for developing a risk management plan for selected transport infrastructure items: https://starfos.tacr.cz/en/vysledky-vyzkumu/RIV%2F00216305%3A26610%2F22%3APR37019 - Article Jsc - <i>Management of Security of Cyber Gateway</i>: https://starfos.tacr.cz/en/vysledky-vyzkumu/RIV%2F00216305%3A26610%2F22%3APU150975?query=rf2qaadnz3za - book <i>Risk management plan for selected elements of critical transportation infrastructures</i>: https://starfos.tacr.cz/en/vysledky-vyzkumu/RIV%2F00216305%3A26610%2F22%3APU146699 - book chapter <i>Risk management of selected elements of critical transport infrastructure</i>: https://starfos.tacr.cz/en/vysledky-vyzkumu/RIV%2F00216305%3A26610%2F22%3APU145777

SELF-EVALUATION REPORT FOR MODULES 4 AND 5

HIGHER EDUCATION INSTITUTION NAME: BRNO UNIVERSITY OF TECHNOLOGY

COMPANY REGISTRATION NUMBER (CRN): 00216305

MODULE 4 – VIABILITY

ORGANISATION AND MANAGEMENT OF R&D&I

4.1 Organisation and management of R&D&I

The HEI will briefly describe its organisational structure¹ and describe the R&D&I management system including the role of the HEI's central management, the management of faculties, and the HEI's institutes in organizing and managing R&D&I. It should also describe the role and structure of the technical and economic apparatus.

Maximum 1000 words.

Self-assessment:

• Organisational structure of Brno University of Technology (BUT)

The **organisational structure** of BUT is designed to support in all aspects the fulfilment of the mission and vision of the University, which is stated in the [Statute of BUT](#) and described in [chapter 5.1](#). The University is structured in accordance with the [Higher Education Act](#) (HEA). It comprises faculties, university institutes, and other specialised units and facilities.

The organisational structure comprising a simplified system of management and decision-making processes at the University is schematically illustrated in Figure 1.

BUT has **autonomous academic and other bodies** (Section 7 of the HEA).

The autonomous bodies of the University are:

- The Rector** who is the statutory representative of BUT. His legal status and competences are defined by the Act (section 10 of HEA).
- The Academic Senate** whose legal status, the manner of its establishment and its powers are determined by law (section 8 and 9 of HEA). Its competences include, for example, the approval of the basic internal regulations, strategic documents and the university budget.

Note: The relationship between the Rector and the AS is not hierarchical, but rather one of equal standing, as the Higher Education Act specifies which of the Rector's actions and decisions must be discussed or approved by the Academic Senate.

- The Scientific Board**, the Rector's advisory body, which represents the university's highest academic authority in the field of research. Its main role is to oversee the academic quality of the University in research, development, and other creative or artistic activities.
- The Internal Evaluation Board** is another advisory body to the Rector; its composition is proposed and its members appointed by the Rector.

¹ A graphical representation of the organisational structure will be provided as an annex.

The other bodies:

- a. **The Board of Trustees** is a separate statutory body comparable to that of a supervisory board, with the primary responsibility of overseeing the University's financial management and the administration of its assets.
- b. **The Bursar**, an additional statutory body of the University, is responsible for the University's internal administration and financial management to the extent delegated by the Rector.

Components of the University are led by **Deans (faculties)**, **Directors (university institutes)** or **Heads/Directors (other departments and special-purpose facilities)**.

Each **faculty** also has its own self-governing and statutory bodies, as defined in section 25 of the HEA. These include:

- the Dean,
- the Faculty Academic Senate,
- the Faculty Scientific Board,
- the Faculty Disciplinary Committee, and
- the Faculty Secretary.

• Economic structure of the University

From the perspective of financial management, BUT functions as a **single accounting unit**. For internal purposes—such as budgeting, cost tracking, and performance evaluation—it is divided into **economic centers**, which manage their allocated financial resources and assets independently.

The **economic centers** of BUT include faculties and other organizational units with independent financial management status, as defined in the University's internal budget and financial rules for the relevant accounting period.

• Management structure of the University

The management structure of BUT is primarily a line-staff structure with a divisional structure of management relations combining direct (line) and methodical (academic or coordination) management relations. These relationships operate at two basic levels:

- a. **Central level** – i.e. the level of BUT as a whole
- b. **Divisional level** – i.e. the level of individual BUT units.

Line managers:

- a. At the central management level
 - Rector,
 - Bursar,
 - Heads of Rectorate departments (or directors)

On the basis of the Rector's mandate

- Vice-Rectors,
- Chancellor,

- b. At divisional management level
 - Dean of the Faculty,
 - Director of the University Institute,
 - director or head of another department or purpose/specific facility,
 - Faculty Secretary (or Rectorate Secretary),
 - Head of a departments, institutes, sections, divisions, offices, etc.

Methodological (Staff) Managers:

- a. At the central management level
 - Vice-Rectors,
 - Chancellor
- b. At the divisional management level
 - Vice/Deans or Deputy Directors.

• System of R&D&I Management

Following the appointment of a new Rector and university leadership in 2022, the organisational structure of BUT Rectorate was fundamentally revised. A **number of additional measures were introduced** with the aim of increasing the efficiency of university management across all areas, including research, development, and innovation (R&D&I).

At the university management level, R&D&I activities fall under the responsibility of the **Vice-Rector for Research and Knowledge Transfer**. This role includes strategic planning of research, development, and innovation activities, as well as oversight of knowledge transfer and intellectual property (IP) management. The Vice-Rector is also responsible for the processes related to the recording and administration of R&D&I results and other creative outputs, including the management of contracts governing the use of results in projects.

The Vice-Rector oversees the following departments:

a. Research Support Department which is responsible for:

- Methodological guidance, and administrative support in basic/applied research, innovation, and contract research, including interpretation of relevant regulations,
- Monitoring R&D and artistic activities and preparing analytical reports,
- Coordinating internal research assessments at BUT in line with the national M17+ methodology,
- Additional responsibilities are listed at <https://www.vut.cz/en/but/structure/rectorate/ovav>

b. Department for Project Support and Knowledge Transfer (DPSKT) consisting of two departments:

Department of Project Support which primarily provides:

- Methodological support for project preparation, implementation, and sustainability across BUT, including expert assistance for applicants,
- Internal project proposal reviews, support with audits, communication with managing authorities, and information sharing with project leaders,
- Coordination and development of cooperation with funding agencies and other partners,
- More details at: <https://www.vut.cz/en/but/structure/rectorate/opptz>

Department of Knowledge Transfer which is responsible for:

- Managing and registering creative outputs as university intellectual property, including related analyses,
- Developing IP protection and commercialization methodologies, including valuation and activation of assets,
- Providing education and advisory services in IP management, and identifying potential industrial partners in the Czech Republic and abroad,
- Additional activities are available at: <https://www.vut.cz/en/but/structure/rectorate/opptz>.

At the faculty level, Vice-Deans for Research and/or Creative Activities are appointed. Faculties and university institutes also maintain their own project support and research/creative activity offices to manage R&D&I agendas.

Several university bodies participate in the governance of R&D&I at BUT, including:

- Scientific Board
- Academic Senate
- Board of Trustees
- Internal Evaluation Board
- Disciplinary Committee
- Ethics Committee
- [International Scientific Advisory Board](#) established in 2023 as a key independent advisory body.
- [Industry Council BUT established in 2023](#).

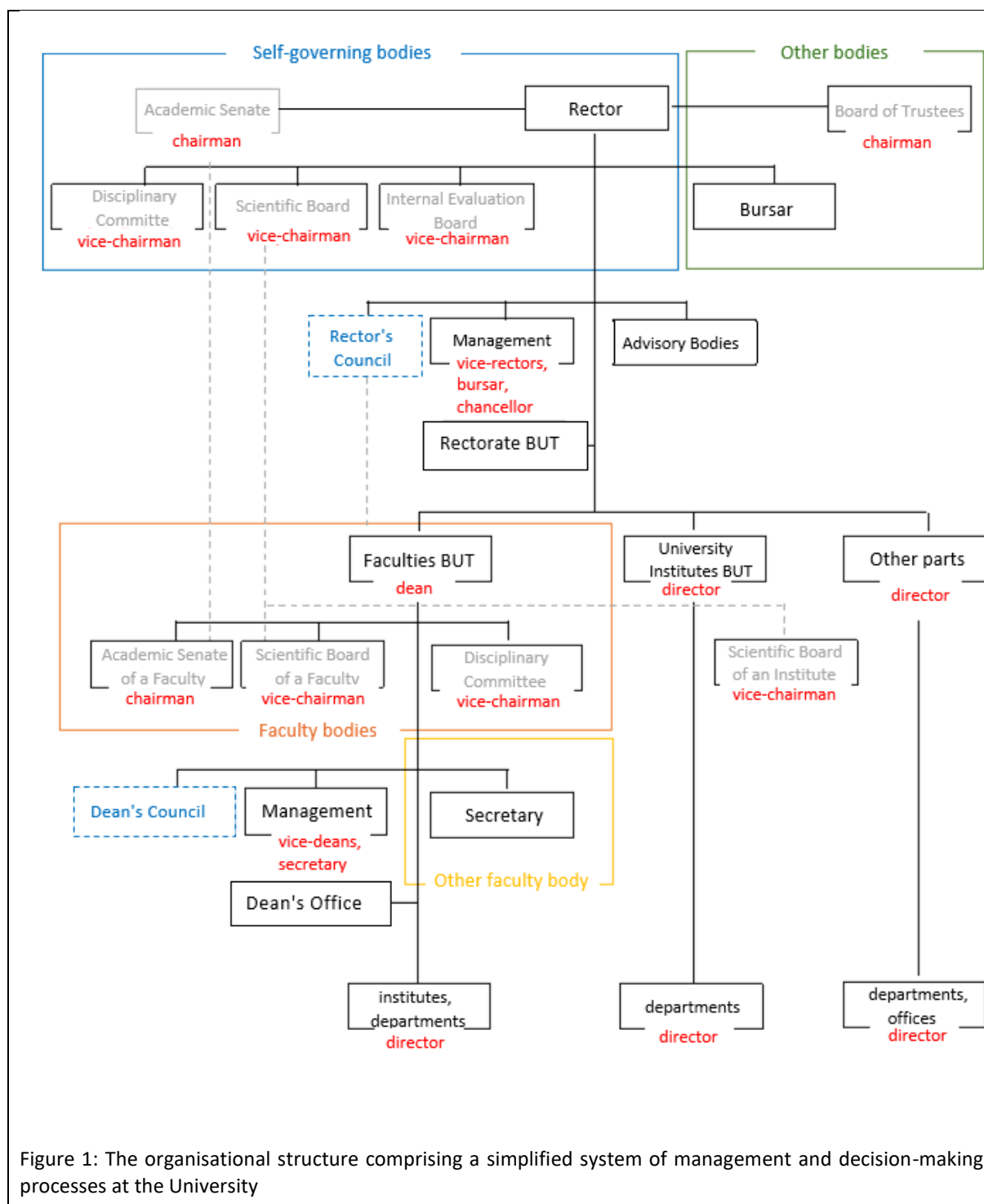


Figure 1: The organisational structure comprising a simplified system of management and decision-making processes at the University

R&D&I QUALITY MANAGEMENT AND SUPPORT SYSTEM

4.2 System of support for a quality R&D&I environment and incentive measures for quality science

The HEI will briefly describe the systemic incentive measures/tools to support quality R&D&I (if applicable). For each measure/tool described, an example will be provided to illustrate the effectiveness of the measure/tool in practice (e.g. number of projects supported by internal grants, statistics on the use of advisory systems, number of newly established research teams, etc.). The description will pay particular attention to:

- A system of support for attracting national and international projects.
- A system for project consultancy/management/administrative support.
- Science management (e.g., personnel and financial capacity for R&D&I transfer, personnel and financial capacity of the project acquisition support system, science managers, data analysts, business and innovation advisors, etc.).
- The existence of internal funding schemes.
- Strategy/opportunities for establishing new research teams (including international ones) and supporting them within the HEI (e.g., sharing of R&D&I equipment, laboratory and information facilities, administrative support, etc.).
- Support system for students and early career researchers².
- A system to support excellent science (e.g., support for excellent scientists, research teams, PhD students, collaborations, infrastructure, etc.).
- A system of support for interdisciplinary research and collaboration within the HEIs.
- The concept of providing conditions for the emergence of new, high quality research directions/topics, especially those with application potential.

Maximum 300 words per point.

Self-assessment:

• A system of support for attracting national and international projects

BUT has developed a robust system to support the acquisition of both national and international research projects. This system is coordinated by the [Department of Project Support \(DPS\)](#), part of the Department for Project Support and Knowledge Transfer. DPS works closely with project offices across faculties and provides them with methodological guidance and expertise.

DPS supports faculties throughout the entire project lifecycle - from proposal preparation to implementation and sustainability. It assists applicants, organises regular meetings for experience sharing, and delivers training events for project managers and researchers. Details are available at: <https://www.vut.cz/en/but/structure/rectorate/opptz>.

The system's effectiveness is reflected in BUT's success in key funding schemes such as **Horizon 2020**, **Horizon Europe**, the **Technology Agency of the Czech Republic (TA CR)**, the **Czech Science Foundation (GA CR)** and the **Ministry of the Interior's security research programmes**. Between 2020 and 2024, BUT submitted **534 project proposals** under Horizon programmes, of which **71 were funded**—including **21 coordinated by BUT** (29.6%). An additional **86 projects** began in earlier years and were being implemented in the evaluated period.

Project funding represents approximately **32%** of the university's annual budget (average for 2020-2024), making BUT **one of the most successful institutions in the Czech Republic** in this regard.

BUT staff actively participate in expert bodies of major national grant agencies (e.g. TA CR, GA CR) and in project evaluation at the international level (e.g., ERC, Horizon Europe). Vice-Rector Prof.

² Student grants, support for PhD students, postdocs and early career scientists.

Martin Weiter is a member of the **Council for Research, Development and Innovation**, which advises the Czech Government and contributes to shaping the national research budget.

BUT prioritises prestigious international projects such as **ERC**, **MSCA**, **EXPRO**, **JUNIOR STAR** (financed by Czech Science Foundation), and **DIOSCURI**, supported through its **Concept for Excellence** and the **Excellence Support Fund**.

- **A system for project consultancy/management/administrative support**

As mentioned above, the project advisory system is coordinated by the [Department of Project Support](#) in cooperation with faculty-level project offices. DPS is also responsible for the implementation of centrally managed strategic projects with university-wide impact, particularly those supported through Operational Programmes (e.g., OP Research, Development and Education, [OP Johannes Amos Comenius](#), National Recovery Plan).

The department manages BUT's profiles in national and international grant portals and ensures that institutional data remain up to date. A designated staff member serves as BUT's **LEAR** (Legal Entity Appointed Representative) in the EU Participant Portal.

DPS provides interpretation of funding regulations and develops internal guidelines to ensure consistency in project application, administration, and reporting. It also works closely with the **Legal Department** and the **Department of Economics**.

All faculties maintain their own project centres to support research teams in both national and international projects.

Several recent measures have **enhanced the effectiveness** of project advisory services:

- The **project support portal** (SharePoint-based) was significantly upgraded. It now serves as the **main communication and document-sharing platform** for project staff, PIs, and applicants. DPS and other units publish calls, timelines, templates, and updates via the portal.
- An **analysis of the university's current information system for project support** was conducted. Based on the findings, a substantial **system upgrade** was proposed, with the first phase scheduled for implementation in **2025**.
- From **2020 to 2023**, the **IN IN NET BUT** project was carried out to improve DPS activities and expand participation in European and international projects—especially **Horizon 2020** and **Horizon Europe**. As part of this initiative, **over 300 consultations** were provided to project applicants and leaders.

These activities have contributed significantly to strengthening BUT's project management capabilities at all institutional levels.

- **Science management (e.g., personnel and financial capacity for R&D&I transfer, personnel and financial capacity of the project acquisition support system, science managers, data analysts, business and innovation advisors, etc.)**

As a **research-oriented university**, BUT considers the management of science a key element of its R&D strategy. The **university has sufficient human and financial resources** in place to support all relevant processes and activities. The system builds on BUT's established organisational structure and R&D governance framework, described in [chapter 4.1](#). The highest body is the **Scientific Board**, which is also responsible for the qualification procedures for a total of [22 scientific fields](#) in which BUT is authorised to conduct procedures for the designation of professors.

The **science management system** is developed and implemented across all level of governance – strategic (BUT leadership), faculty-level as well as at the level of individual departments and research units within faculties.

At the central level, key support functions include:

- The [Research Support Department](#) (4 staff), which coordinates core science support activities.
- The [Department of Knowledge Transfer](#) (6 staff), in collaboration with the **Legal Department** (2 lawyers) and the **Department of Economics**, oversees the **commercialization of R&D&I results**. In 2024, the role of **Business Development Manager** was introduced to support commercialization of the results. Faculties also have designated **Knowledge Transfer Managers** focused on IP protection.
- The [Department of Project Support](#) (15 staff), provides comprehensive assistance for project acquisition and implementation and works closely with faculty project teams.
- The **Department of Strategy** (4 staff) develops strategic analyses and documents to support decision-making across the university.

Support for academic and scientific researchers, including PhD students, is also provided by other BUT units, in particular:

- [Centre of Information Services](#)
- [Continuing Education and Counselling Centre](#)
- [VUTIUM Press](#)
- [Central Library](#)

These activities are primarily funded from the **central university budget**, with additional support from **external project funding** tied to strategic goals.

• The existence of internal funding schemes

In order to support a high-quality R&D&I environment and foster the development of quality science, BUT allocates a proportion of its budget for this purpose. In addition, special funds obtained from **targeted support** acquired from national and international providers are also used for support, which BUT redistributes through its internal grant competitions.

An overview of BUT internal grant titles:

- [The Internal Grant Agency](#) (IGA) distributes funds for specific research on the basis of an internal grant competition, within which students of master and doctoral study programmes are supported. Since this is the main tool for supporting student research, it is described in more detail in the section on the student support system in this chapter below.
- **BUT Scholarship and Partnership Programme** for Excellence and Support for the Departures and Arrivals of Excellent Researchers and Excellent Students - an internal grant programme aimed at supporting mobility,
- **Internal funding schemes** based on funds obtained from external sources of earmarked support (projects). These include, for example:
 - internal grant competition to support Proof of concept projects to verify the possibilities and methods of commercialization of the obtained results (2024 - 2028),

- internal grant competition “Quality Internal Grants at BUT” to support research within doctoral studies (2020-2023).
- **Internal funding schemes to support other research-related activities, in particular:**
 - publishing professional books and other publications within the University publishing house VUTIUM,
 - support for publishing in selected (quality) open access journals.
- **Faculty internal funding schemes** - some of the faculties and institutes of BUT have their own tools to support a quality R&D environment such as the support programmes and competitions at the Faculty of Fine Arts
<https://www.favu.vut.cz/en/students/support-programmes-and-competitions>.

● **Strategy/opportunities for establishing new research teams (including international ones) and supporting them within the HEI (e.g., sharing of R&D&I equipment, laboratory and information facilities, administrative support, etc.)**

BUT actively supports the establishment of new research groups, focusing especially on **young excellent researchers** and high-quality **foreign and domestic scientists**. An essential role in this regard is played by **CEITEC BUT**, which serves as a platform and “incubator” for emerging top-tier research teams.

As outlined in [chapter 4.10](#), almost half of the University’s R&D&I budget comes from **competitive grants**. The strategy to build new teams is therefore closely linked to successful participation in relevant grant schemes supporting the establishment of new research team such as **ERC, ERC-CZ, GA CR – JUNIOR STAR, GA CR – EXPRO**, and **MSCA**, as well as other **Horizon Europe** instruments.

BUT encourages researchers to apply for these schemes and supports them through its **Research Excellence Fund**. This fund provides **bridge funding** to high-quality applicants (e.g. holders of the Seal of Excellence) who narrowly missed grant support, enabling them to continue their research for at least two more years while preparing new project proposals.

Another strategy involves recruiting top researchers from leading foreign and Czech institutions. For example:

- **Prof. Eric Glowacki** (neurostimulators, bioelectronics) from Linköping University: <https://www.ceitec.eu/optel-med/pr7>
- **Prof. Petr Neugebauer** (novel NMR–EPR spectrometer) from Stuttgart University: <https://www.ceitec.eu/thz-frascan/>
- **Prof. Martin Pumera** (2D nanomaterials): <https://www.ceitec.eu/2d-nanomaterials-electrochemistry/pr18>
- **Dr. Jan Macák** (hydrogen-metal heat systems): <https://www.ceitec.cz/breakthrough-zero-emissions-heat-generation-with-hydrogen-metal-systems/pr25>

These researchers also receive additional institutional support to further develop their teams—e.g., to involve more **PhD students** and expand their scientific infrastructure.

Example:

CEITEC establishes new research groups based on the scientific merit and leadership potential of prospective group leaders, following a highly competitive, internationally open selection process. The procedures for establishing a new group are detailed in the CEITEC Career Rules.

Given the limitations in available institutional funding, new groups in recent years have typically been established following successful acquisition of prestigious external grants, such as ERC, EXPRO, or JUNIOR STAR. New groups are subject to a three-year probation period, after which their

performance and long-term potential are thoroughly evaluated by the International Scientific Advisory Board (ISAB). Based on this evaluation, a group is either discontinued or promoted to the status of a full research group.

A key asset in attracting and supporting new research groups is the [CEITEC Nano](#) shared research facility, which offers virtually free access to state-of-the-art scientific instrumentation and advanced nanofabrication tools. The existence of this infrastructure has been a decisive factor for at least six research groups that chose to establish themselves at CEITEC.

During the period 2019–2023, CEITEC established five new research groups, contributing to the total of twelve groups formed since the end of the institute's initial five-year development phase.

• **Support system for students and early career researchers³**

BUT provides extensive support for PhD students, postdoctoral researchers, and early-career scientists. Due to space limitations, only the core elements of the system are presented here.

- **Academic support and mentoring:** participation of multiple supervisors (supervisor-specialist) and practitioners in the supervision of PhD students, support in the writing of professional papers, academic writing courses; mentoring and adaptation for new employees (see [Guideline No.15/2024 - BUT Career Rules](#), Articles 9 and 11).
- **Financial and grant support:** regular and exceptional scholarships for students, Internal Grant Agency for PhD students, mobility support (including participation in conferences), support for publication activities and support through internal grant titles:
 - The Internal Grant Agency (IGA, 80 million CZK/3.2 million EUR distributed annually) for students of the **master's and doctoral programmes**. The grant competition emphasises the strengthening of students' independent creative activity in cooperation with academic staff in the field of research and development. The projects enable students to be intensively involved in solving the problem, and also within the team-based research and development activities.
 - **Research Excellence Fund** (see below),
 - Further grant support based on external projects.
- **Career support:** participation in team projects under the guidance of experienced scientists, collaboration and participation in research projects with companies; "[Industrial Doctorate](#)" as one of the forms of doctoral studies; [courses focused on business support - ContriBUTe](#).
- **Educational and other courses** are provided by the faculties and the [Continuing Education and Counselling Centre](#), also includes the [CEITEC BUT doctoral school](#), other doctoral schools are being prepared.
- **Further central support** - e.g. psychological and other counselling within the Alfons BUT Centre (<https://alfons.vutbr.cz/en/>)
- **Support within individual faculties**, e.g. <https://www.favu.vut.cz/en/students/support-programmes-and-competitions>

³ Student grants, support for PhD students, postdocs and early career scientists.

- **A system to support excellent science (e.g., support for excellent scientists, research teams, PhD students, collaborations, infrastructure, etc.)**

BUT supports excellent science through a comprehensive system based on the **Concept of Support for Excellent Science**, available at <https://www.vut.cz/en/rad/excellence>. Researchers at BUT have successfully secured prestigious projects, including **ERC**, **Horizon 2020**, **Horizon Europe**, and **MSCA**, and several researchers rank among the leading figures in their fields.

Key pillars of excellence support:

a) Research Excellence Fund:

This unique fund within Czech universities, is created annually from institutional support and used to:

- Motivate and assist in preparing excellent grant proposals,
- Stabilise high-performing research teams,
- Support the implementation of selected excellent projects.

b) Support for International Cooperation

BUT provides targeted funding through its **Scholarship and Partnership Programme for Excellence**, supporting both incoming and outgoing mobility of excellent researchers and students. Funding is awarded based on the quality and expected impact of the proposed mobility (see also [chapter 4.8](#)).

c) Additional Systemic Measures

- ✓ In **2024**, BUT revised the rules for **redistributing institutional support** among faculties and institutes to better incentivise excellence (see [chapter 4.11](#)).
- ✓ Since **2023**, the University has also presented the **Rector's Awards for Outstanding Scientific Results and Artistic Outcomes** in ten categories (see more [here](#)), aligned with the principles of the [Agreement on Reforming Research Assessment](#).
- ✓ BUT's excellent science is supported by state-of-the-art facilities concentrated in its [large research infrastructures and centres of excellent research infrastructure](#).
- ✓ Impact assessment and continuous improvement of these tools are carried out through BUT's [R&D&I quality assurance system](#), described in [chapter 4.3](#).

- **A system of support for interdisciplinary research and collaboration within the University**

The core tool for fostering **interdisciplinary research and cooperation** at BUT is the introduction of [strategic research areas](#). These areas are based on fields where BUT demonstrates **international competitiveness** through the quality of its basic and applied research outcomes.

Strategic research areas are formed through **coordinated interfaculty and interdisciplinary collaboration**, enabling the concentration of **human, knowledge, and infrastructural resources**. This approach enhances the University's competitive position and increases success in grant competitions. The initiative connects departments and institutes across BUT with **thematically related or complementary specialisations**, encouraging the pooling of expertise and capacity.

These areas are aligned with national and EU **social and economic priorities**, including sustainability and technological innovation, contributing to BUT's societal impact and long-term development.

Key focus areas include:

- Semiconductor and nanotechnologies
- Nuclear energy
- Automotive and e-mobility
- Aerospace technologies
- Electron microscopy
- Artificial intelligence and cybersecurity

- Environmental technologies and the circular economy

As a strategic framework for research development, these areas are detailed in [chapter 5.1](#).

Examples of support for interdisciplinary research and collaboration within BUT includes:

- ✓ BUT supports interdisciplinary cooperation through targeted **grant applications** and by providing **favourable implementation conditions** for joint projects. For example, within the [OP JAC Intersectoral Cooperation](#) call, aimed at strengthening ties between research and industry, BUT participates in **5 out of 18 supported projects** (e.g. [ECO&Stor](#)).
- ✓ Since **2022**, the budget for **interfaculty cooperation within Internal grant agency** has been **doubled** from (80 000 EUR to 160 000 EUR per year), supporting collaborative research across faculties.
- ✓ The **CEITEC research centre** was founded to promote interdisciplinary research and the consortium includes **Brno University of Technology, Masaryk University, Mendel University, Veterinary University Brno, the Institute of Physics of Materials of Czech Academy of Sciences and Veterinary Research Institute**. CEITEC BUT specifically bridges **material sciences and life sciences**, supporting high-impact, cross-disciplinary collaboration.

- **The concept of providing conditions for the emergence of new high-quality research directions/topics, especially with application potential**

BUT fosters new research directions by building on its system of [strategic research areas](#), described in detail in [chapter 5.1](#). These areas connect departments and institutes across the University through thematically related and complementary expertise, encouraging **synergistic collaboration** and capacity pooling. This approach supports the emergence of new topics while addressing key **national and EU priorities**, such as innovation, sustainability, and industrial competitiveness.

Key strategic areas include:

- ☑ **Semiconductor technologies**, especially chip design and production
- ☑ **Nanotechnology**
- ☑ **Automotive technologies**, including **e-mobility**
- ☑ **Aerospace technologies**
- ☑ **And other** (see [chapter 5.1](#))

In the semiconductor field, BUT is responding to the global chip shortage by developing new research directions and study programmes. It collaborates with major global companies like **onsemi** (<https://www.onsemi.com>) and **Codasip** (<https://codasip.com>), and with Korean and Taiwan companies and universities. In **April 2025**, the **Czech Semiconductor Centre** will be launched at BUT, integrating the Czech Republic into the emerging **European network of competence centres** under the **European Chips Act** initiative ([more info](#)).

Further examples of research development include collaborations with **Škoda Auto** and **Thermo Fisher Scientific** (see [chapter 4.12](#)).

BUT also advances new topics by recruiting **top world-class scientists**. Examples include:

- **Prof. Eric Glowacki** (Linköping University), working on **bioelectronic neurostimulators** within CEITEC and an **ERC project**: <https://www.ceitec.eu/optel-med/pr7>
- **Prof. Petr Neugebauer** (University of Stuttgart), developer of a novel **NMR–EPR spectrometer**, winner of the **Golden Amper Award 2025**: <https://www.vut.cz/en/but/news-f19528/revolutionary-spectrometer-developed-by-ceitec-but-team-wins-golden-amper-2025-award-d284490>

4.3 Quality Control System for R&D&I Environment

The HEI will briefly describe the system of internal and external evaluation of research units, including the following aspects:

- Internal and external evaluation of R&D&I quality: This includes the evaluation of R&D&I by the HEI's authorities, the evaluation of research teams (if such a system exists), and the involvement of international scientific councils or other independent advisory bodies in quality control and of R&D&I management.
- The ethical aspects of research: this includes adherence to ethical principles and good scientific practice, compliance with related legislation (codes of ethics, ombudspersons, ethics committees and ethics hotlines, and systems for reporting whistleblowing and ethical misconduct).

The HEI shall demonstrate the functioning of the quality control systems in the R&D&I environment by examples (e.g., brief information on the evaluations carried out and their results, specific examples of the use of whistleblowing or the handling of ethical violations, etc.).

Maximum 500 words plus 200 words for each example described (max. five).

Self-assessment:

In accordance with the Higher Education Act, the internal quality evaluation at BUT is carried out by the [Internal Evaluation Board](#), which is governed [by the Rules of the Quality Assurance System and Internal Quality Evaluation of BUT - Rules of Procedure of the Internal Evaluation Board of BUT](#). Quality assurance is assessed annually in [the Report on Quality Assurance and Internal Evaluation of BUT](#).

Beyond this basic setup, **BUT is one of the few universities to have introduced additional measures to support the quality of research** since 2022 (with the new university management). The essential measures, which will be described in more detail within the examples below, include:

- Establishment and annual meetings of the [International Scientific Advisory Board](#) (ISAB),
- Changing the evaluation rules and procedure in line with the [CoARA](#) principles,
- **Two-phase internal evaluation** of research quality at BUT in [2023](#) and [2024](#),
- BUT evaluation within the Institutional Evaluation Programme (IEP) of the [European University Association](#) (EUA).

Other examples of the strengthening of quality control systems for the R&D&I environment that have been implemented at BUT since 2022 include:

- ✓ Introduction of **Evaluation visits** of BUT management to individual faculties to discuss the implementation of the Strategic Plan of the faculties and its further direction. The evaluation of the Strategic Plan is also linked to the setting of financial support for the implementation of Faculty Implementation Plans;
- ✓ introduction of **new rules for the distribution of institutional support** ([chapter 4.11](#));
- ✓ developing and promoting **internationalization** ([chapter 4.8](#));
- ✓ and others.

As clearly reflected in the mission and vision of BUT ([chapters 4.1, 5.1](#)), BUT is consistently committed to **ethical principles and good scientific practice**. To this end, BUT uses the following tools and measures:

- BUT has established and consistently applies BUT Code of [Conduct, which is also](#) based on the European Charter for Researchers - [EU Code of Conduct for Research Integrity](#),
- [Ethics Committee](#) was established to ensure compliance with the principles of BUT Code of Ethics. It is also responsible for reviewing complaints regarding compliance with this Code.
- BUT has established external **expert ethics committees** to assess the ethics of research in areas where this is required by law or other national or European legislation (research on humans or biological material of human origin, work with experimental animals or work with genetically modified organisms).
- In 2023, the position of **Social Safety Coordinator** was established with the status of **Ombudsperson**. Social safety issues and institutional settings in this area are detailed on the [website](#). Examples of areas addressed are described in the [Report of the Social Safety Coordinator at BUT 2022-2024/03](#),
- In accordance with the European Commission Directive, BUT has established an [Internal Whistleblowing System \(IWS\)](#) for all employees of BUT and persons who become aware of an illegal act in connection with the performance of their work and wish to report it through the IWS.

Examples:

① International Scientific Advisory Board (ISAB)

An important step in the strategic management of the University and increasing its competitiveness within the European space was in 2023 **the establishment of the International Scientific Advisory Board (ISAB hereafter)**. The ISAB serves as the University's core independent advisory body, particularly in the area of its strategic development and the enhancement of the quality of its scientific, development, innovation and educational activities. It consists of a total of eleven international experts covering the main scientific fields of the faculties and institutes of BUT. The criteria for their selection included, in addition to scientific expertise, managerial experience in top management of European and other foreign universities. The ISAB members include, for example, former Rector of [TU Wien](#), Prof. Sabine Seidler, former Vice President for Research of [ETH Zurich](#), Prof. Detlef Günther, Vice Rector of [Tampere University](#) in Finland Prof. Jarmo Takala, Dean of the Faculty of Mechanical and Industrial Engineering of [TU Wien](#) Prof. Christian Bauer, and others. **The ISAB BUT is thus fully competent to advise on R&D management at the University, its recommendations are extremely valuable in this respect and are reflected in the strategic management of the University as well as faculties.**

② Change of rules and evaluation procedure in line with CoARA principles

For BUT, responsible evaluation in the field of scientific and artistic activity is one of the key signs of respect for basic ethical standards. In 2022, BUT became one of the first signatories to [the Agreement on Reforming Research Assessment](#) and a member of the CoARA coalition. By signing the document and joining the coalition, the University has, among other things, committed to carry out independent R&D assessment in accordance with the CoARA principles.

BUT is committed to applying a continuous improvement approach to the quality of its educational, creative and administrative activities in accordance with the principles of quality assurance and development. Quality assessment at BUT is a systematic process aimed at monitoring, evaluating and improving the quality of educational, creative and administrative activities. The results of quality assessment serve as a basis for planning improvement measures and for strategic decision-making

at all levels of BUT. BUT encourages the active involvement of students, academic staff, employees and external partners in quality assessment and improvement processes.

Details on how the CoARA principles be implemented at BUT are described in detail in the [BUT Action Plan](#).

③ Two-phase internal evaluation of research quality at BUT in 2023 and 2024

In line with CoARA principles, BUT conducted a **two-phase evaluation of research fields and artistic segments in 2023 and 2024**. [The first phase, in 2023](#), focused on individual scientific fields and artistic segments. It included **benchmarking** with top European technical universities and other leading Czech and international institutions, as well as self-assessment. Evaluation materials were reviewed by the [International Scientific Advisory Board](#) (ISAB), whose members visited faculties and institutes to provide methodological feedback.

[The second phase](#), completed in 2024, involved an extensive **peer review** process including a four-day on-site visit. A total of **45 international experts** assessed research, doctoral studies, and other academic activities at the level of departments. ISAB members coordinated the process to ensure transparency and consistency of the evaluation. The evaluation covered the period **2019–2023**.

Objectives:

- To obtain **independent feedback** from internationally recognised experts for both academic units and university leadership.
- To assess the **quality of research, creativity, and doctoral education** in an international context.
- To identify **areas of excellence** and confirm the quality of research in strategic domains.

The evaluation is documented in a comprehensive report available on the University's website: <https://www.vut.cz/en/rad/quality-assurance>. Most institutes were rated as above standard to excellent by international benchmarks. The evaluation provided valuable insights into the quality of research at BUT, identifying key strengths and areas for improvement. The findings form a solid basis for the University's strategic development.

In the context of the Czech Republic, BUT is the only University that has carried out such an extensive and detailed two-phase evaluation and thus received feedback for further qualitative development of R&D&I.

EVALUATION OF RESEARCH, OTHER CREATIVE ACTIVITIES AND DOCTORAL STUDIES AT BUT 2024

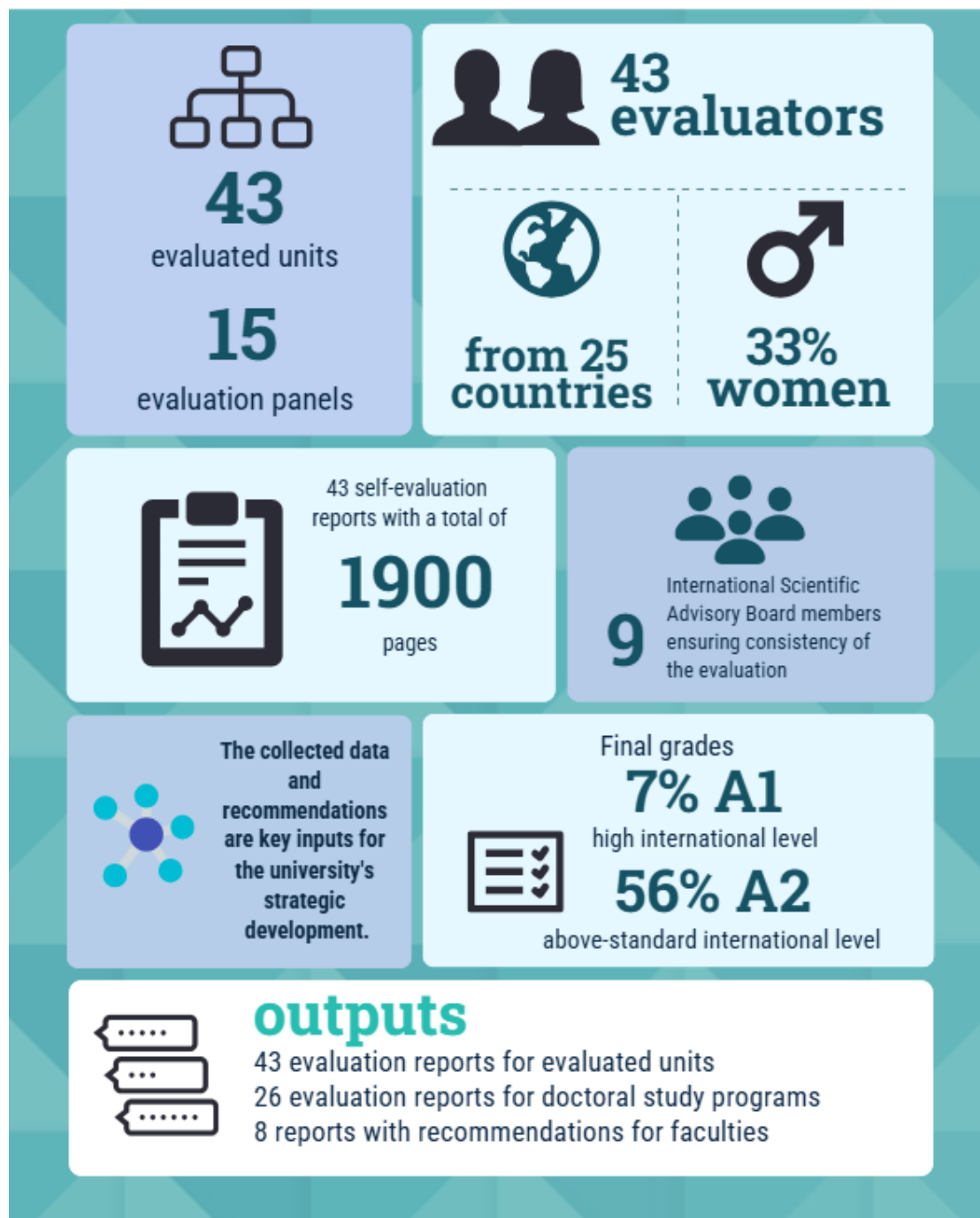


Figure 2 Basic information about the evaluation in 2024

4 BUT evaluation within the Institutional Evaluation Programme (IEP) of the European University Association (EUA)

BUT is a member of the [European University Alliance \(EUA\)](#) and participates in the **Institutional Evaluation Programme**, which enables it to regularly receive valuable international feedback on the setting and direction of the University.

In November 2022, BUT underwent its **fourth evaluation**, repeated several years apart (2004-2011-2018-2022). The evaluation covers the following areas: management and decision-making, quality, teaching and learning, creative activity, relationship with society and internationalisation. It is based on a self-assessment report in which BUT highlighted the progress it has made since the last EUA evaluation in 2018. The actual visit of the evaluators took place in November 2022. The outcome of the evaluation is an assessment of the progress since the initial evaluation was completed, as well as suggestions and recommendations for improvement in particular areas of the institution's activities, as well as risks arising from the findings (see [EUA Evaluation Report](#)).

EUA's suggestions and recommendations are instrumental in guiding the University's ongoing development. Details and the resulting evaluation reports are provided on the Quality Management and Evaluation website: <https://www.vut.cz/en/board/internal-quality-evaluation>.

<https://www.vut.cz/en/but/news-f19528/but-successfully-completed-the-international-evaluation-of-eua-iep-d238072>

5 Ethical Issues

In the context of addressing **ethical issues**, several cases were handled at various faculties and university institutes—typically one or a few instances per year. These cases included, for example, excessive publishing by members of a research group in journals published by MDPI (and others), where there was a reasonable suspicion of insufficient quality of the peer review process—such as overly rapid and uncritical evaluations. Based on an assessment by the [ethics committee](#) and following academic discussion, the faculty decided to exclude these publications from further research evaluation and internal R&D funding allocation. The head of the research group subsequently resigned from BUT. This particular case occurred at the Faculty of Chemistry.

In response, **BUT implemented additional measures** in this area. It strongly discouraged publishing in predatory journals, introduced regular monitoring and analysis of this issue, and excluded financial support for such publications from the University's [Open Access Fund](#).

Where relevant, faculties establish **ethics committees for research**, e.g. the Ethics Committee of the Faculty of Electrical Engineering and Communication for biomedical research.

4.4 Sustainability and resilience of R&D&I

The HEI will describe the arrangements for sustainability and increasing the resilience of R&D&I, if such a system exists, and provide examples of its implementation. These include:

- The sustainable development concept (strategy, objectives, plan and implementation).
- Social responsibility strategy.
- A knowledge transfer system, if it is established at central level.⁴
- The third role, the transfer of R&D&I results to society and interaction with local actors.
- The concept of research data management (data collection, access and sharing of data, use of the information obtained for R&D&I management, responsibility for data files, archiving and backup of data).
- Ethics and personal data protection.
- Intellectual property protection.
- Ensuring institutional resilience (resistance to foreign influence, cyber security, risk prevention, prevention of misuse of R&D&I and knowledge transfer results, a system to prevent or mitigate the negative impacts of R&D&I and knowledge transfer in society).
- Digitisation and the use of smart technologies.
- The institutional strategy for Open Science 2.0/Open Access (if one exists), including information on the operation of the institutional repository or similar tools.
- A system for training undergraduate and postgraduate students as well as staff in the field of intellectual property protection and technology transfer.

The HEI will demonstrate the effectiveness of its procedures by examples (e.g., the number of people trained in intellectual property protection and technology transfer, data on the usage of Open Access repositories, handling of risk incidents, etc.).

Maximum 300 words per point.

Self-assessment:

• The sustainable development concept (strategy, objectives, plan and implementation)

Ensuring sustainable development within the University is one of the priorities that BUT pays great attention to. At the management level, the [Vice-Rector for Artistic Activities and Sustainability](#) is directly responsible for this issue. **BUT has a special part of its web designated to sustainability - [Sustainable University](#).**

In 2024, the university management approved the [Sustainability Strategy of BUT](#). The strategy provides a comprehensive framework for integrating sustainability principles into all activities of the University. It focuses on four key areas: **education, research and creative activities, governance and management, and societal role**. For each area, it defines visions, strategic objectives, and key actions aligned with the [Sustainable Development Goals \(SDGs\)](#), responding to current and future needs.

The BUT strategy is complemented by action plans, a communication framework, and monitoring tools. The University aims to achieve short-term goals by 2025, medium-term by 2030, and a long-term vision by 2040. Implementation is regularly monitored and updated to reflect new sustainability challenges.

Key areas of sustainable development at BUT:

- **Teaching and education:** BUT incorporates sustainability into all study programmes and supports educators in promoting responsibility and respect.

⁴ If the knowledge transfer system is decentralised to the unit level, the HEI shall describe how the system works.

- **Science, research and creative activities:** As a technical university, BUT focuses on solutions for a safer and more sustainable future.
- **Governance and institutional decision-making:** BUT promotes responsible infrastructure management and efficient use of resources.
- **Societal role:** university supports public engagement in science, [the arts](#), lifelong learning, [knowledge transfer](#), and other activities.

Examples:

- ✓ Matter – Recycling and Upcycling Centre at Faculty of Fine Arts:
<https://www.favu.vut.cz/en/rad/projects/detail/32653>
- ✓ Transfer of R&D&I results through collaborations with cultural, educational and social institutions with Faculty of Architecture (e.g. [Vector of Poverty](#), Vesna Lab, Understandable Architecture, [Antarctica](#))

• **Social responsibility strategy**

The University systematically links its corporate social responsibility (CSR) and sustainability activities across all its key areas: education; research and creative activity; governance; and social role.

In the field of **education**, the University integrates ethical principles and social responsibility directly into its curricula. Students are encouraged to think critically and evaluate the impact of technology on society, which is closely linked to research activities on sustainability. The involvement of students in projects with a positive social impact and the development of interdisciplinary collaboration then directly links the educational process with the University's third role and applied research.

The University's **scientific and creative activities** are focused on current challenges. The implementation of the principles of responsible research and innovation ensures that research activities respect ethical principles and societal needs.

BUT is active in **collaborating with industry** on sustainable technologies, sharing research capacities with not only regional businesses and collaborating on the production of expert studies for local government. **Technology transfer**, including **support for start-ups and spin-offs**, ensures effective transfer of innovative solutions into practice.

In **management**, the University leads by example. It actively works to **reduce its carbon footprint**, implements **circular economy** principles, and promotes **equality, diversity**, and the **wellbeing** of its staff and students—creating an inclusive environment essential for quality education and research.

In its **societal role**, BUT contributes to public understanding of science by organising **debates and outreach activities** on technological and environmental challenges. Cooperation with the **non-profit sector** and **local government** fosters the practical use of research outcomes. Support for **STEM education** at primary and secondary schools ensures continuity in the educational process. The University also participates in **regional development** and the resolution of local issues, reinforcing its commitment to sustainable societal progress.

- **A knowledge transfer system, if established at central level⁵**

⁵ If the knowledge transfer system is decentralised to the unit level, the HEI shall describe how the system works.

The [Department of Knowledge Transfer](#) is the central unit for [knowledge transfer at BUT](#). It provides expert, methodological, and educational support and coordinates activities across the University, led by the **Knowledge Transfer Coordinator**.

The **Business Development Manager** supports the commercialization of research results and liaises with industry partners, including technology parks, innovation centres, and chambers of commerce. Legal support is provided by the **Legal Department**.

The Knowledge Transfer Coordinator also supervises faculty-based **Knowledge Transfer Managers**, who are responsible for identifying new findings, promising technologies, and project outcomes with commercial potential.

The fundamental principles and rules governing knowledge transfer and the commercialization of industrial property at BUT are defined by [Guideline no. 10/2023 - Registering, Protection and Commercialisation of the industrial property rights of BUT](#).

Additional specific areas are governed by the following internal regulations:

- [Guideline No. 29/2017 – Rules for the Handling of Trade Secrets](#)
- [Methodological Directive No. 2/2019 – Use and Documentation of Income from Knowledge Transfer](#)
- [Guideline No. 2/2020 – Establishment and Participation of BUT in Legal Entities](#)
- [Guideline no. 8/2022 - Establishing of spin-off and start-up companies at BUT](#)

In 2023, BUT established the [Industry Council BUT](#), an advisory body to the Rector. Its aim is to create a communication platform that supports strategic decision-making and quality management. The Industry Council also acts as the [Commercialization Council](#) within the project "**Acceleration of Support for Proof-of-Concept Activities at BUT**", aimed at validating the **technical feasibility and commercial potential** of selected R&D results.

A key instrument for supporting the commercialization of results with higher **technology readiness levels (TRL)** and the creation of **start-ups and spin-offs** is the **South Moravian Innovation Centre (JIC)** (<https://www.jic.cz/en/>), founded in 2003 by BUT in cooperation with other Brno universities and the South Moravian Region. Since then, JIC has supported over **300 companies** with combined revenues of nearly **CZK 30 billion** (approx. **EUR 1.18 billion**) and employing around **6.500 people**.

Entrepreneurial support for students and staff is also provided through BUT's innovation ecosystem [ContriBUTe](#).

- **The third role, the transfer of R&D&I results to society and interaction with local actors**

In addition to its core roles in education and research, BUT fulfils a **third role** – to influence and engage with society at local, national, and international levels. This includes contributing to **employment, industry, entrepreneurship, cultural life, science popularisation, lifelong learning, and civil society development**.

The third role of BUT includes (but is not limited to):

- **Science promotion** - BUT participates in the [Czech European Researchers' Night event](#), opening its labs and research to the public. It shares university life and achievements via the [NewsFromBUT.com](#) portal and the [Technically Speaking podcast](#) (in Czech only). BUT also supports [FabLab Brno](#), the first open digital workshop in Brno.
- **Knowledge transfer** - described above

- **STEM promotion** - BUT is a national leader in promoting [STEM](#) studies with the aim to **increase the share of graduates in STEM fields**, see e.g. <https://www.vut.cz/en/but/news-f19528/roundtable-at-but-supports-key-collaboration-for-future-of-stem-studies-d275240>.
- **Lifelong Learning**- The [University of the Third Age](#) offers courses and lectures for seniors.
- **BUT junior** - a **concept of a children's university** designed for primary school pupils and students in the lower grades of multi-year grammar schools.
- **Summer schools, suburban camps** - Faculties offer summer schools and camps, including [IT Summer School for Girls](#) (in Czech only), which aims to break gender stereotypes in tech and build confidence among female students.
- **Volunteering & Emergency Response** - this was demonstrated, for example, during the **coronavirus pandemic**, when BUT got involved in dealing with this crisis situation in many ways (example [here](#)), or in June 2021, when a **tornado** hit several villages in South Moravia, causing enormous damage that had to be addressed immediately. A big emphasis is given to the [help related to the conflict at Ukraine](#).
- **Sports activities** - BUT provides extensive sports facilities (over 30,000 m²) via its [Centre of Sport Activities](#), promoting health and wellbeing for students and staff.
- **The concept of Research Data Management (data collection, access and sharing of data, use of the information obtained for R&D&I management, responsibility for data files, archiving and backup of data)**

As a technology-oriented university, **BUT possesses exceptional human and technical (hardware) capacities for research data management**, including data collection, storage, access, sharing, archiving, utilization, security, and intellectual property (IP) protection. In this area, **BUT is among the leading universities in the Czech Republic**.

BUT **balances the principle of open science** with the **protection of IP**. For research data generated through publicly funded projects, BUT follows the open access policy in line with Directive (EU) 2019/1024 on open data (transposed into Czech law under §12 of the Research and Development Support Act). This policy is implemented through [Open Science Strategy at the Brno University of Technology for 2022–2025](#).

Open access to data is applied once research results have been achieved and IP protection has been secured. Exceptions to open access may be applied for reasons of privacy, civil or military security, or commercial confidentiality.

In privately funded projects, BUT enforces strict protection of research data, IP, and trade secrets, often supported by research security management standards (e.g., TISAX in the automotive sector, FME).

Other aspects of research data management can be described only briefly due to text limitations:

Data management: The information system for managing research outputs includes a dedicated module for research data management. This module provides metadata descriptions, links the data with research results (usually stored in the BUT repository), and includes references to data storage locations.

Data storage: BUT is developing its own storage capacities, also utilizes external cloud solutions, and is a member of a consortium of leading Czech universities building comprehensive infrastructure within the European Open Science Cloud (<https://www.eosc.cz/en>).

Organizational support includes:

- [Research Support Department](#) – data utilization, reporting methodology
- [Department of Knowledge Transfer](#)– IP protection, knowledge transfer
- [Center of Information Services](#)– data storage, archiving, security
- [Central Library](#)– data sharing, researcher training, [Data management plan](#) tools

• Ethics and personal data protection

BUT places strong emphasis on **ethical conduct** and the **moral integrity** of everyone involved in its academic environment—students, teachers, researchers, and staff. In 2016, the University adopted the [BUT Code of Conduct](#), which was updated in 2022. This document outlines a set of core moral principles that guide behaviour both **within the University** and, where appropriate, **beyond its campus**. The Code is aligned with the values of the **European Charter for Researchers**.

To uphold these principles, BUT established an [Ethics Committee](#), an advisory body appointed by the Rector. The Committee reviews **complaints regarding violations of the Code of Conduct** and offers guidance on ethical matters. Its members are selected from among respected academic and professional staff known for their integrity and dedication to the university community.

The Committee considers only complaints directly related to the **BUT Code of Conduct**. Other types of complaints must be submitted under the procedures outlined in the [BUT Control Regulations](#). Any **student, employee, or lifelong learning participant** at BUT may submit a complaint using a [publicly available form](#).

In addition to its commitment to ethics, BUT ensures the **protection of personal data** in accordance with **Regulation (EU) 2016/679** of the European Parliament and of the Council (the **General Data Protection Regulation – GDPR**). The University has appointed a **Data Protection Officer**, responsible for overseeing compliance and ensuring the lawful processing of personal data.

More information on personal data protection at BUT can be found at: <https://www.vut.cz/en/but/gdpr>

• Intellectual property protection

The **intellectual property (IP) protection system** is an integral part of the broader **knowledge transfer system** described above.

IP protection is coordinated by the [Department of Knowledge Transfer](#), in collaboration with **faculty-based Knowledge Transfer Managers** and **Designated Officers** at each faculty. The department provides expert, methodological, and educational support in IP protection, managed by the **Knowledge Transfer Coordinator**.

Legal support is provided by the [Legal Department](#), which includes specialists in IP and knowledge transfer law. This support covers key areas such as agreements with patent attorneys, licensing agreements, transfer of rights, results utilisation, non-disclosure agreements (NDAs), and more. BUT uses **standardised contract templates**, which are further adapted as needed to meet the specifics of each case.

The **core principles and rules** governing knowledge transfer and IP protection are set out in [Guideline no. 10/2023 - Registering, Protection and Commercialisation of the industrial property rights of BUT](#), which is further supplemented by internal regulations at the faculty level where applicable.

The **Knowledge Transfer Coordinator** also provides methodological leadership to the **faculty-based Knowledge Transfer Managers**, who are responsible for identifying new findings, promising technologies, and research results with **commercial potential**. They support inventors in matters of

IP protection and act as intermediaries in negotiations with industrial partners, including defining cooperation parameters, co-ownership terms, and licensing agreements.

The entire process of **IP disclosure, protection, and commercialisation tracking** is administered through the **University Information System**, specifically the modules “Inventions and Copyright Works” and “Intellectual Property.” Administrative aspects are handled by **Designated Officers at faculties**, who are methodologically supported by an **IP Protection Assistant** and an **IP Methodologist** at the Department of Knowledge Transfer.

- **Ensuring institutional resilience (resistance to foreign influence, cyber security, risk prevention, prevention of misuse of R&D&I and knowledge transfer results, a system to prevent or mitigate the negative impacts of R&D&I and knowledge transfer in society)**

In response to current global and security challenges, BUT places strong emphasis on institutional resilience and has recently adopted several key measures:

A. Organisational measures

- **A Security Coordinator** position has been established, covering general and research-related security.
- **Manual for Preventing Undue Influence and related guideline** has been prepared, the provisions of which help to identify the risks of cooperation with third parties,
- The [Cyber Security Governance Committee](#) was appointed, which, sets the rules and intensively addresses the implementation of technical measures,
- In the field of Knowledge Transfer, several policies have been adopted to ensure effective intellectual property protection (above).
- The [Open Science Strategy at BUT for 2022-2025](#), launched in 2022 is regularly updated. The upcoming revision will place stronger emphasis on **IP protection** and **sensitive research data management**. BUT also organises regular **training sessions** and **seminars** for staff and students (e.g. <https://www.vut.cz/en/rad/openscience>),
- To prevent or mitigate potential negative societal impacts of R&D and knowledge transfer, BUT relies on specialised ethics committees, as discussed in sections 4.3 and 5.3.

B. Technological measures

BUT continuously improves its technical and cybersecurity infrastructure. Recent steps include:

- Regular penetration testing confirms a high level of network and application security, supported by a well-designed network segmentation system.
- Enhanced security through a **unified authentication infrastructure** and **multi-factor authentication** for selected users.
- Deployment of systems for **vulnerability detection** and **centralised endpoint protection**.
- Participation in **quantum network R&D**, where insights are applied to protect BUT's information assets (cooperation of FEEC and FIT with other organizations at national and international level).
- A strong focus on cybersecurity education, with dedicated bachelor's and master's programmes in **Cybersecurity** (FIT) and **Information Security** (FEEC).

C. National and international cooperation

BUT addresses institutional resilience in **international networks and alliances** (EULIST, CESAER). At the national level, it collaborates with the **Ministry of the Interior**, other universities, and expert platforms, including the **Digitalisation and Cybersecurity Working Group** of the MYES.

• Digitisation and the use of smart technologies

Digitalization and smart technologies bring both significant opportunities and challenges for the University. A key prerequisite for effective development is the **ongoing mapping and analysis of internal processes**, which supports well-targeted and efficient changes in the University's information environment. **Process modelling** helps identify areas with the greatest potential for reducing manual workload.

In recent years, a major focus has been on the **digitisation of document-related processes**. Tools have been implemented for **financial control**, **approval workflows**, and **electronic signing**, including remote and secure signing via **RemSig**, a CESNET digital certificate service.

In 2023–2024, the most prominent topic was the **use of artificial intelligence**. BUT took a proactive approach by creating [recommendations and rules for the responsible and safe use of AI](#) across administration, research, and education. In collaboration with Microsoft, several AI use-case scenarios are being prepared, aimed at improving efficiency and saving human effort.

BUT is also modernising its **internal information systems**, replacing outdated solutions with modern **web-based technologies**. E.g. in 2024, a **new module for the registration of R&D&I outputs at BUT** was developed to meet growing demand for modern, user-friendly solutions in this area.

In the field of **smart technologies**, BUT has invested in **energy management** and the **modernisation of intelligent building control systems**, including the rollout of a new **Computer-Aided Facility Management (CAFM)** system. These initiatives have led to notable **energy savings** and improved service efficiency, contributing to longer facility lifespan.

BUT continues to actively seek new opportunities to **digitalise**, **automate**, and apply **smart technologies** across all areas of its operation.

• The institutional strategy for Open Science 2.0/Open Access (if one exists), including information on the operation of the institutional repository or similar tools

As outlined in the section on research data, BUT consistently applies the **principle of balancing open access in science with the protection of intellectual property**. Open access policies are primarily applied to research funded from public sources, in line with the [Open Science Strategy at BUT for 2022–2025](#).

The strategy addresses three **key areas of open science**:

1. Preservation and publication of scientific publications,
2. Research data management,
3. Open access to research infrastructures.

An integral part of the strategy is an Action Plan outlining concrete implementation steps, funded annually from the university budget.

In line with national and European legislation, BUT strives to carefully assesses each research outcome before making it publicly accessible, especially to determine whether intellectual property protection should be pursued first. This ensures that legal requirements for open access do not compromise the University's ability to secure rights to valuable results.

A key tool for implementing open access is the [BUT Digital Library](#), which serves as the institutional repository. It collects, processes, preserves, and makes publicly available outputs closely linked to the University. These include research publications by BUT authors, conference proceedings, journal articles published at BUT, and final theses. The library performs two main roles:

- Publication – making individual works openly accessible;
- Archiving – ensuring long-term preservation and access.

The repository supports both **preprint and postprint publishing** and includes **author identifiers** such as ORCID (Since 2017, all publishing authors at BUT are [required to have a registered ORCID iD](#)).

Since the Open Science Strategy was adopted in early 2022, an update is being prepared to reflect recent developments. The revised version will put greater emphasis on protecting intellectual property, sensitive data, and the integrity, confidentiality, and availability of research information. It will also address information and cybersecurity risks that could affect research outcomes or the University's reputation.

More at University's **Open Science portal**: <https://www.vut.cz/en/rad/openscience/open-but>

• A system for training undergraduate and postgraduate students and staff in the field of intellectual property protection and technology transfer

The **Department of Knowledge Transfer (DKT)** provides training for **undergraduate and postgraduate students** as well as **university staff** in the fields of **intellectual property (IP) protection** and **technology transfer (TT)** through several formats:

1. **Regular courses** are delivered twice a year by the [Continuing Education and Counselling Centre of BUT](#). These courses cover IP fundamentals such as patent types and procedures, patent attorney services, prior art searches, national and international databases, and contracts for joint exploitation. Lecturers include DKT and Legal Department staff (e.g. KT coordinator, IP specialist), all of whom have completed specialised IP training at the Industrial Property Office in Prague. Courses also feature invited experts from institutions such as the **Technology Agency of the Czech Republic**, **CzechInvest**, and the **South Moravian Innovation Centre (JIC)**, as well as **patent attorneys** and **spin-off founders**, who share real-world experiences.
2. **Thematic courses and workshops** are held in response to new grant calls or updates in IP legislation. Topics include funding for national and international IP protection and collaboration with patent attorneys.
3. **Quarterly in-house workshops and seminars** are organised for **faculty knowledge transfer managers** and **designated officers** to enhance their expertise. These cover specialised topics like legal, financial, or tax-related aspects of IP protection. DKT also provides **individual consultations**.

BUT's KT websites: (<https://www.vutbr.cz/en/ctt>) are regularly updated with the latest news and resources. It serves as a central information hub for **researchers, students, and external partners**, offering practical guidance on **intellectual property protection, relevant legislation, knowledge commercialisation**, and access to the **BUT scientific activity database**. The sites also feature a comprehensive **FAQ section**, which addresses the most common questions regarding the IP protection process at BUT.

Example: On **9–10 April 2024**, BUT hosted the **11th National Transfer Conference** (<https://www.vut.cz/nkt>; in Czech only), organised together with [Transfera.cz](#) of which BUT is a member. The event was attended by over **130 professionals**, including **Minister for Science, Research and Innovation**.

PERSONNEL POLICY

4.5 Structure of human resources

The HEI shall describe the current state, age structure, degree of internationalization and development trends of the staff involved in R&D&I, along with their distribution by a job title and gender for the period of 2020–2024 as detailed in annex tables (Tables 4.5.1 to 4.5.3) (including the provision of technical and economic facilities).

Maximum 1000 words.

Self-assessment:

BUT employs a broad and diverse body of academic, research, technical, and economic staff engaged in research, development, and innovation (R&D&I). **Between 2020 and 2024, the University saw moderate growth in its R&D&I personnel, as well as a notable trend toward increased internationalisation, gender balance, and rejuvenation of the academic workforce.**

• Development trends and current state

While the total staff number of BUT decreased slightly from 3 069.6 in 2020 to 3 008.5 in 2024, the number of **staff involved in R&D&I (measured in FTE) increased in nearly all academic categories**. The number of professors rose from 131.7 in 2020 to 139.2 in 2024, associate professors from 290.6 to 307.3, and assistant professors from 543.3 to 560.4. The assistant category showed the highest relative growth, from 120.0 to 143.9 FTE.

Early-career researchers (ECRs) also grew slightly in number, from 79.9 to 84.6 FTE. A notable development occurred in the category of “Researchers in other categories” which more than doubled - from 194.8 in 2020 to 479.0 FTE in 2024. However, this sharp increase occurred partly due to a revision of the University’s internal wage rules in accordance with European standards (HR Award). Subsequently, the number of “technical and economic staff” decreased significantly, from 1.666,1 to 1.257,5 FTE. This change reflects not only the reclassification of roles but also broader organizational adjustments implemented during the evaluated period.

• Age and gender structure

Between 2020 and 2024, BUT made **gradual progress in improving gender balance** across academic ranks. The overall share of all women employees increased from 19.3% in 2020 to 21.5% in 2024, at academic and research positions from 19.3% to 21.5%. The share of women among professors and assistant professors remained stable, while increasing among associate professors (from 11.5% to 13.7%), early career researchers (from 20,7% to 21.5%) and researchers in other categories (from 17.1% to 21.3%). In the assistant category, the percentage of women declined from 40.9% to 35.3%.

Gender differences across age groups show that younger staff (under 39) are more gender-balanced or female-dominated (e.g. in assistants and technical staff), while older cohorts, particularly in senior academic roles, remain predominantly male.

Measures undertaken to **enhance gender balance** are described in [chapter 4.7](#). At the same time, BUT is trying to systematically increase the participation of women in male dominated areas, including through the promotion and popularization of women's participation in technical fields (see e.g., <https://www.vut.cz/en/but/news-f19528/women-in-science-how-to-overcome-obstacles-and-succeed-in-the-scientific-world-d282732>; <https://www.vut.cz/en/usi/people-f38102/women-from-but-who-move-the-world-of-science-and-technology-d237608>).

In terms of age distribution, a positive trend is particularly evident among professors. While in 2020 only 9.8% of professors were in the 40–49 age group, by 2024 this share had increased to 19.3%. While the average age of professors appointed at BUT in 2020 was 51.2, in 2024 it was 48.2.

Career development incentives are embedded in the University's [Career Rules](#) (see [chapter 4.6](#)). In addition, BUT encourages early-career academics to pursue associate professorship (habilitation) and full professorship procedures at a younger age through [Resolution no. 29/2017 - Incentive target bonus for associate professors and professors at BUT](#).

The age structure of associate professors remained relatively stable; however, the proportion of staff in the oldest age category decreased from 15.7% in 2020 to 12.4% in 2024. The most significant rejuvenation occurred in the category of Researchers in other categories, where the share of employees under 29 years of age increased from 21.4% in 2020 to 45.5% in 2024.

- Internationalisation

The internationalisation of R&D&I staff has improved during the reference period. The share of foreign nationals in the total staff pool rose from **6.6% in 2020 to 8.6% in 2024 (FTE)** and **from 7.4% to 10.9 % in academic and research positions**.

In senior academic positions (professors and associate professors), the proportion of foreign staff increased: from 0.1% to 3.6% for professors, and from 0.3% to 0.7% for associate professors. Among assistant professors, the share rose from 1.3% to 2.3%.

The highest proportions of foreign nationals continue to be among early-career researchers (23.6%) and “researchers in other categories” (20.0%).

BUT recognises internationalisation as a strategic priority and continues to strengthen international recruitment, including through support programmes such as [BUTalent Scholarship](#) and institutional mobility schemes.

To attract foreign talent, BUT conducts international selection procedures in line with the European Charter for Researchers and the Code of Conduct, confirmed by [its HR Excellence in Research Award](#) (renewed in 2023).

To broaden its outreach, BUT **advertises vacancies on international platforms** such as Euraxess, ResearchJobs, and ResearchGate. Postdoctoral positions are open only to candidates with prior experience outside BUT—either through doctoral studies at another institution, a minimum of 12 months of employment elsewhere, or long-term international research stays—to prevent academic inbreeding (see [Career Rules](#), Article 8(7)).

Equal recruitment, adaptation, and career development conditions apply to both Czech and foreign employees. Dedicated support is provided by [BUT Welcome Service](#), which assists international staff with residence formalities, communication with authorities, accommodation, and more, in cooperation with faculty HR departments (see more in [chapter 4.6](#)).

4.5.1 Staff involved in R&D&I of the university (FTE) in the period under review

Academic/professional position	Total 2020	Of which women [%]	Of which foreign [%] ⁶	Total 2024	Of which women [%]	Of which foreign [%]
Professor	131.7	10.0%	0.1%	139.2	10.0%	3.6%
Associate Professor	290.6	11.5%	0.3%	307.3	13.7%	0.7%
Assistant Professor	543.3	25.6%	1.3%	560.4	25.7%	2.3%
Assistant	120.0	40.9%	3.2%	143.9	35.3%	3.5%
R&D Personnel ⁷	5.0	20.0%	0	0	0	0
Researchers in other categories ⁸	194.8	17.1%	11.7%	479.0	21.3%	20.0%
Technical and economic staff ⁹	1666.1	52.1%	1.9%	1257.5	64.4%	1.5%
Early career researcher ¹⁰	79.9	20.7%	20.6%	84.6	21.5%	23.6%
Scientific, research and development staff involved in teaching activities	38.1	17.2%	34.9%	36.6	14.4%	43.7%
Total number of foreign nationals	250.0	31.6%		261.4	31.4%	

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, research and development staff, scientific staff not falling into other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

Note: The average number of hours worked is calculated as the ratio of the total number of hours actually worked during the reference period, from 1 January to 31 December, by all staff (including agreement on work activity, excluding agreement on work performance) to the total annual working time pool per full-time employee. The full-time status of the worker in the evaluated unit is always reported. If an employee holds more than one type of full-time job within the evaluated unit, the total sum of the two shall be reported.

4.5.2 Percentage of HEI's staff involved in R&D&I, categorized by age structure, job title, and gender in the year 2020 (number of physical employees and staff)

Academic/professional position	Under 29 years [%]		30-39 years [%]		40-49 years [%]		50-59 years [%]		60-69 years [%]		70 years and over [%]	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0.6%	0	9.8%	0	16.6%	11.1%	39.3%	9.4%	33.7%	10.9%
Associate Professor	0	0	9.5%	6.3%	44.1%	7.4%	18.9%	21.9%	15.7%	15.1%	11.8%	5.0%
Assistant Professor	1.6%	10.0%	42.8%	17.8%	37.8%	24.5%	6.2%	47.4%	9.6%	54.2%	2.1%	23.1%
Assistant	29.5%	17.3%	35.8%	38.1%	21.6%	55.3%	10.8%	47.4%	2.3%	75.0%	0	0
Early career researcher ¹¹	15.2%	25.0%	84.8%	23.6%	0	0	0	0	0	0	0	0
R&D Personnel ¹²	0	0	33.3%	0	50%	33.3%	0	0	0	0	16.7%	0

⁶ Researchers with Slovak citizenship are not considered foreign.

⁷ The category "Other scientific, research and development personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

⁸ The category "Researchers not falling under other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

⁹ Who participates in the management and support of R&D&I in the institution.

¹⁰ See Definition of Terms in Methodology HEI2025+.

¹¹ See Definition of Terms in Methodology HEI2025+.

¹² The category "Other scientific, research and development personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

Researchers in other categories ¹³	21.4%	25.0%	39.0%	20%	27.1%	18.8%	4.8%	7.1%	3.1%	0	4.8%	0
Technical and economic staff ¹⁴	22.3%	30.1%	22.8%	38.0%	22.9%	68.5%	18.7%	69.4%	10.6%	50.7%	2.7%	35.3%
Scientific, research and development staff involved in teaching activities	2.1%	0	70.8%	20.6%	18.8%	0	4.2%	0	2.1%	0	2.1%	0

Note: The total number of employees/workers as of 31.12. of the calendar year in question is to be given, irrespective of the proportion of full-time equivalents, but only in an employment relationship, i.e. not including persons working parttime agreements. Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

4.5.3 Percentage of HEI's staff involved in R&D&I, categorized by age structure, job title, and gender in the year 2024 (number of physical employees and staff)

Academic/professional position	Under 29 years [%]		30-39 years [%]		40-49 years [%]		50-59 years [%]		60-69 years [%]		70 years and over [%]	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	19.3 %	6.3%	18.1 %	13.3 %	30.1 %	14.0 %	32.5 %	11.1 %
Associate Professor	0	0	9.0%	12.5 %	44.8 %	11.3 %	23.1 %	13.4 %	12.4 %	25 %	10.7 %	5.3%
Assistant Professor	1.1%	14.3 %	32.1 %	19.7 %	48.2 %	26.0 %	10.3 %	41.8 %	6.5%	50.0 %	1.9 %	25%
Assistant	28%	16.3 %	30.3 %	22.6 %	23.4 %	46.3 %	10.3 %	33.3 %	7.4%	76.9 %	0.6 %	0
Early career researcher ¹⁵	8.1%	41.7 %	87.5 %	20.9 %	5.4%	25.0 %	0	0	0	0	0	0
R&D personnel ¹⁶	0	0	0	0	0	0	0	0	0	0	0	0
Researchers in other categories ¹⁷	45.5 %	30%	27.7 %	17.2 %	17.3 %	18.7 %	5.0 %	20.0 %	2.1%	7.7 %	2.4 %	6.7%
Technical and economic staff ¹⁸	8.3%	33.1 %	17.4 %	53.6 %	31.0 %	68.8 %	25.5 %	73.6 %	14.8 %	57.6 %	3%	48.8 %
Scientific, research and development staff involved in teaching activities	0	0	51.2 %	13.6 %	37.2 %	12.5 %	7.0 %	33.3 %	4.7 %	0	0	0

Note: The total number of employees/workers as of 31.12. of the calendar year in question is to be given, irrespective of the proportion of full-time equivalents, but only in an employment relationship, i.e. not including persons working parttime agreements. Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

¹³ The category "Researchers not falling under other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹⁴ Who participates in the management and support of R&D&I in the institution.

¹⁵ See definitions in Methodology HEI2025+.

¹⁶ The category "Other scientific, research and development personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁷ The category "Researchers not falling under other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹⁸ Who participates in the management and support of R&D&I in the institution.

4.6 Academic and Research Careers

The HEI will briefly describe the central system for HR recruitment, placing particular emphasis on recruitment from outside the HEI, especially from abroad, as well as system of career development of academic and research staff, if such system exists. Information will be provided on:

- Career development rules and legislation related to the recruitment and career development of domestic and foreign employees (e.g., Career Code, HR Award, OTMR policy, etc.).
- International tenders.
- The process of new employee adaptation and mentoring.
- Transparent distribution of institutional time, attitudes towards chaining of contracts and senior academic positions.
- Rules for filling senior positions in the context of R&D&I.
- The rules and support system of sabbaticals.
- Measures for the return of workers after a stay in an external workplace, including a foreign workplace.
- Arrangements for workers to return after maternity/parental leave or other career breaks (e.g., caring for family members).
- Other relevant information at HEI discretion.

The HEI shall provide a reference to an existing career code or similar document (if one exists). The HEI shall describe the effectiveness of the systems used with examples (e.g. a model example of the adaptation process, a specific anonymised example of an academic's career path, statistics on the return after maternity/parental leave or career breaks before and after the implementation of the measures, etc.).

Maximum 300 words per point.

Self-assessment:

- **Career development rules and legislation governing the recruitment and career development of domestic and foreign employees (e.g., Career Code, HR Award, OTMR policy, etc.)**

Career development is regulated by [Guideline No.15/2024 – BUT Career Rules](#), which outlines principles, conditions, and motivational tools for staff development. It also regulates recruitment for academic and research positions. The Guideline defines four basic career paths: academic, scientific-research, technical-economic, and blue-collar, with the possibility of both horizontal (change of career path) and vertical (progression within the career path) mobility. For academic staff, recommended timeframes are set for each position level to encourage advancement and support quality management. In line with European standards, research positions are categorised as R1–R4.

BUT supports development at all career stages. Article 9 of the [Career Rules](#) also lists career development tools such as training, conference participation, sabbatical leave, international internships, flexible work arrangements, parental leave adjustments, telework, and mentoring. Faculties and institutes may define additional tools specific to their context.

The recruitment and selection of new employees at BUT is regulated by the [Regulation of Selection Procedure Rules at BUT](#) and [Methodical directive no. 4/2024 - Admission procedure for filling positions](#) which enforce a policy of open, transparent and merit-based recruitment. This applies to both domestic and international candidates and includes support for staff mobility abroad.

In 2024, the Guide for Recruitment, Selection and Admissions at Brno University of Technology was issued to support recruitment and selection of employees. In 2025, BUT will launch a comprehensive recruitment support system, including an e-course for admission committee members, available in both Czech and English.

• International tenders

The BUT conducts its HR policy in line with the principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers, to which it committed in 2019. In 2021, it was awarded the HR Excellence in Research Award as a confirmation of the implementation of these principles. In 2023, BUT then successfully renewed its HR Award certificate for a further three-year period. Full details are available at <https://www.vut.cz/en/but/employee-support/hr-award>.

As part of the HR Award process, BUT performed a [GAP analysis](#) and developed an [Action Plan](#) to support the implementation of the Charter, the Code, and the Open, Transparent and Merit-based Recruitment (OTM-R) policy.

International selection procedures are regularly used, especially for academic and research positions, including postdoctoral roles. Vacancies open to foreign applicants are published in English on platforms such as Euraxess, ResearchJobs, and ResearchGate.

To **prevent academic inbreeding**, BUT requires that applicants for postdoctoral positions must either (i) have completed their doctorate at a different institution, or (ii) have at least 12 months of professional experience elsewhere, or (iii) have spent a minimum of 12 months at another institution, preferably abroad (see [Career Rules](#), Article 8(7)).

The recruitment, onboarding, and career development processes are the same for foreign and Czech employees. Additional support for international staff is provided by the [BUT Welcome Service](#), which assists current and prospective employees with residency formalities, communication with authorities, accommodation, and more, in cooperation with Faculty/Institute HR departments.

As an example of successful recruitment of foreign researchers from the Faculty of Information Technology can be cited: [Dr. Johann Rohdin](#) originally from Sweden was recruited through a standard job offer published via an international job platform.

• The process of new employee adaptation and mentoring

The adaptation process is regulated by [Article 11 of the Career Rules](#), according to which it is **provided by the mentor**. The mentor oversees the course of adaptation, introduces the employee to the employee evaluation system, sets the conditions of mentoring (mentor, scope, duration, etc.), and sets the career development plan at the end of the adaptation period. The adaptation period lasts for 3 months, unless otherwise advised by the senior manager. According to [Appendix 3 of BUT Wage Rules](#), the mentor may be granted an exceptional remuneration for the mentoring activity during the adaptation period of the new employee.

The aim of the adaptation is mainly to orient the employee in the workplace and to integrate them successfully into the team. Upon the finalization of the adaptation process, the employee is fully acquainted with the employment processes, the University's IT systems, the workplace, their rights and obligations. Basic training of employees in the use of the University's IT systems is provided by the [Centre of Information Services](#).

To support the adaptation, there is also a [Guide for BUT employees](#) available on the [Support and Development of Employees and Students website](#), as well as on internal SharePoint. The Guide provides employees with practical information about the University, its units, working conditions, etc.

- **Transparent distribution of institutional time, attitudes towards chaining of contracts and senior academic positions**

In labour relations, BUT proceeds in accordance with the **Labour Code and the Higher Education Act**. BUT **supports the concept of single contract**. In accordance with the Labour Code, the conclusion of fixed-term contracts is limited to a maximum of three consecutive fixed-term contracts, each for a maximum of three years. If a follow-up contract is concluded after this period, it can only be an indefinite-term one. With regard to quality management, a chain of fixed-term contracts is recommended for academic staff recruited as Assistants and Assistant Professors (see [Article 8 of the Career Rules](#)). A vast majority of current staff members work on permanent contracts. Outside employment contracts are also used to a lesser extent. The employment relations of employees are fully under the responsibility of the individual Faculties and Institutes.

The **term of office of the Dean and the Rector** is limited to 4 years, while they may be appointed for a maximum of two terms. The term of office of vice-rectors and vice-deans is limited to the term of office of the Rector and the Dean who appointed them. The term of office of senior staff responsible for the personnel, economic and professional management of institutes and departments at the level of Faculties and Institutes is limited in time in accordance with [the Strategic Plan of BUT](#) and the Strategic Plan of the Faculty / Institute of BUT. This term of office may be linked to the term of office of the Dean of the Faculty / the Director of BUT Institute. When the term of office is repeated, these senior staff members normally go through a selection procedure.

- **Rules for filling senior positions in context of R&DI**

The rules for filling senior positions in the context of R&D&I are identical to those described in the above sections of this chapter. The filling of senior positions at BUT is governed [by the Selection Procedure Rules at BUT](#). Advertisements are always published in **English**. Positions are filled through an **open selection procedure** in accordance with the principles of the **OTM-R**. The appointment of leadership positions focused exclusively on managing R&D&I at BUT primarily concerns CEITEC, where research groups constitute the majority of its units.

- **The rules and support system of sabbaticals**

The sabbatical leave conditions are regulated by the [Career Rules in Article 10](#) in accordance with the Higher Education Act. Sabbatical leave may be granted to an academic staff member at their own request for a period of 6 months once every 7 years, unless serious circumstances concerning the fulfilment of their educational tasks, including the operation of the workplace, prevent it. The Faculty deans or institute directors decide on granting the sabbatical based on the opinion of the head of the employee's department. This leave is granted in particular for the purpose of preparation of qualification or scientific papers. It can be implemented in the Czech Republic or abroad. The application must include a list of the outputs of creative activity to be submitted after the end of the leave. More detailed conditions of granting may be regulated by an internal standard of the Faculty / Institute of BUT - e.g., [Instruction No.3/2022 - Conditions of granting and taking creative leave of the Faculty of Fine Arts](#).

The possibility of being granted the sabbatical leave is not much used by BUT staff, with the exception of the Faculty of Fine Arts. Academic, scientific and research staff of BUT more often carry out longer stays abroad, which commonly have the character of sabbatical leave in the form of direct foreign internships and stays (see table in [chapter 4.8](#)).

- Measures for the return of workers after a stay in an external workplace, including a foreign workplace

Employee stays at foreign or external workplaces (e.g. in industry) are most often conducted as **working or study internships**. During these placements, the employment relationship typically continues, making the return process straightforward. According to the Higher Education Act, doctoral students (with exceptions of persons caring for a child or a close relative) are required to complete a study stay abroad, typically lasting 3–6 months, though longer stays are not uncommon. The statistics of long-term stays within BUT, where the arrivals of foreign staff are also listed for comparison purposes, are given below in [chapter 4.8](#).

In cases where staff terminate their employment during a long-term foreign stay, the same recruitment rules apply upon return as for new hires (see HR Award section). However, BUT actively seeks to **retain or re-engage high-quality returning staff**, often through continued professional contact, invitations to BUT conferences, and cooperation with the foreign host institution to foster bilateral mobility.

To support the return of employees after their stay at a foreign workplace, BUT utilizes **national grant schemes** such as the Czech Science Foundation (GA CR) Postdoc Individual Fellowship – INCOMING, aimed at attracting early-career researchers with international experience back to Czech institutions to carry out independent research projects. As staffing policy is largely decentralized at BUT, individual Faculties and Institutes may have their own tailored support schemes to facilitate the return of staff from foreign or external workplaces. These may include research funding, reintegration support, or individual negotiations.

BUT also monitors long-term international mobility (over 3 months), including both outgoing and incoming staff, as part of its internal reporting and HR planning efforts (see table below).

Year	2020	2021	2022	2023	2024	TOTAL
Outgoing staff	Data not available		4	43	39	86
Outgoing Ph.D. students	50	61	83	97	53	421

- Arrangements for workers to return after maternity/parental leave or other career breaks (e.g., caring for family members)

BUT supports its employees during maternity, parental, or paternity leave, as well as in situations involving care for family members or public service leave. Employees are offered **job retention, telework, flexible schedules, or reduced working hours upon return**.

Employees on leave are included in BUT's employee benefits programme. Parents of children under the age of six are eligible for a child-related allowance through a benefit card, which can be used for expenses such as preschool fees, camps, or clubs. In 2024, benefits were provided for 832 children.

On-campus childcare is available through the [Edisonka Children's Group](#), **available to all students and employees**. It provides care for children from 6 months of age and operates at full capacity. In response to growing demand, a new childcare facility is planned to be opened at the Faculty of Civil Engineering in September 2025, and a modular kindergarten project is being prepared near Palacký Hill.

To further support work-life balance, BUT published [the Guide to Work-Life Balance](#), offering **guidance for staff returning from maternity/parental leave, long-term absence, or career breaks**. The [Guide](#) is available on the university website, as well as on the internal SharePoint.

Starting in 2025, BUT will promote RETURN GRANTS offered by the Czech Science Foundation, aimed at scientists returning to research after a career break due to childcare or caregiving responsibilities. These grants help facilitate the reintegration of researchers and the reconciliation of professional and personal life.

These measures demonstrate BUT's long-term commitment to creating a family-friendly work environment and supporting the return and development of staff after career interruptions.

• Other relevant information at HEI discretion

Promoting employee well-being

BUT cares for its employees and supports their well-being. In cooperation with the [Centre of Sports Activities](#), it offers employees courses in ergonomics and health exercises. As part of the Operational Programme Johannes Amos Comenius [NEXT GENERATION BUT: Enhancing the Quality and Relevance of Education at BUT](#) (implementation from 1/2025), BUT will focus, among other things, on the implementation of educational events to promote well-being.

Legislative support for HR processes

All HR processes are supported by internal and national legislation, such as:

- [HRS4R/HR Award at BUT](#)
- [Selection procedure rules at BUT](#)
- [Methodical Directive No. 4/2024 – Admission procedure for filling positions](#)
- [BUT Wage Rules](#)
- [Appendix No. 3 to the Wage Regulations of BUT](#)
- [Guideline No. 6/2018 – Protection of personal data at BUT](#)
- [BUT Code of Conduct](#)
- [Internal Catalogue of Job Positions](#) (internal source, only in Czech)
- [Guideline no. 9/2024 - Extraordinary, Visiting and Emeritus Professors](#)
- [Directive No.15/2024 - BUT Career Rules](#)

4.7 Gender equality measures

The HEI will briefly describe the measures relating to the application of gender equality in the areas required for assessment criteria 4.5, 4.6, with an emphasis on:

- Gender equality in recruitment and career development.
- Legislation and documents regulating gender equality (e.g., Gender Equality Plan, Action Plans, strategic documents for equality, including links to overarching strategies, etc.).
- The filling of leadership positions (including gender balance in leadership positions, see Table 4.7.1).
- Nominations to professional bodies.
- Evaluation and remuneration.
- Measures to reconcile the work and family life of researchers (flexible working hours, flexible forms of work, maternity/parental leave management, facilitating child/dependent care, age management in relation to gender).
- Measures to eliminate negative workplace behaviour such as mobbing and sexual harassment.

The HEI shall provide evidence of the examples from practice (e.g. use of flexible working hours, dealing with cases of mobbing or sexual harassment, compliance with the principles of gender equality in HEI professional bodies, etc.).

Maximum 300 words per point.

Self-assessment:

• Gender equality in recruitment and career development

To strengthen its commitment to gender equality, BUT established the position of **Gender Equality (Equal Opportunities) Coordinator** in 2022. The Coordinator works closely with faculty and institute representatives, forming a **Gender Equality Coordination Group** that meets regularly to implement the goals outlined in the [BUT Gender Equality Plan](#) and the [HR Award Action Plan](#).

In line with [Article 9 of the Selection Procedure Rules](#), selection committees are encouraged to be gender-balanced. All applicants are evaluated solely on their qualifications and experience, in accordance with the principles of **transparency and non-discrimination**.

Job advertisements consistently state whether the position is open to both men and women, or if any restrictions apply under the Labour Code. It is also recommended to highlight the suitability of advertised positions for **underrepresented groups**, such as **students, parents on maternity/parental leave**, and others.

These values are also embedded in **career development processes**, as defined in the **Career Code**. Subchapter 4.5 notes encouraging trends between 2019 and 2023, such as:

- An increase in the share of **women in academic positions**, e.g. among Associate Professors from **10.8% to 13.1%**.
- A significant rise in the share of **women in administrative roles**, from **51.7% to 64.5%**.
- A gradual increase in the proportion of **women among early-career researchers**, from **20.9% to 23.4%**.

These figures confirm a **positive and sustained trend** in gender equality at BUT, reflecting the university's systemic efforts to create an inclusive and supportive working environment across all levels of academic and administrative life.

- **Legislation and documents regulating gender equality (e.g., Gender Equality Plan, Action Plans, strategic documents for equality, including links to overarching strategies, etc.)**

BUT actively supports gender equality through a framework of strategic documents, internal legislation, and practical implementation at university and faculty levels.

The central policy document is the [BUT Gender Equality Plan 2022–2024](#), developed in line with **European Commission guidelines for Gender Equality Plans (GEPs)**. Between September and December 2024, the Plan underwent a **re-audit** in cooperation with *Gender Studies, s.r.o.*, which included a review of internal processes, legislation, focus groups, and individual interviews. The Plan was positively evaluated in the January 2023 report by the **Institute of Sociology of the Czech Academy of Sciences**. A revised version, the [BUT Gender Equality Plan 2025–2028](#), was published at the end of 2024.

In 2024, BUT also published its [Code of Gender-Sensitive Communication](#) which provides guidance for inclusive communication across the University.

In 2025, BUT will finalise and approve a new **Human Resources Promotion and Development Strategy**, which will serve as the **umbrella document** for the Gender Equality Plan and other HR-related policies. Equal opportunities are continuously addressed and communicated via the [BUT website](#).

An example of good practice at the faculty level is the **Faculty of Fine Arts**, which has published a comprehensive set of **recommendations and guidance for students** addressing gender, ethics, social issues, and inclusive language: <https://www.favu.vut.cz/en/students/counselling>.

The recommendations include topics like Social Safety and Ombudsperson; Jobs and Opportunities; Recognized Parental Leave; [BUT Alphons Counselling Centre](#); Topic of Sexual Harassment; Therapy Tips; BUT Code of Conduct and Ethics Committee; FFA Working Group for Collaboration with Consent; Increased Access to Psychosocial Support; Topic of Discrimination in the Academic Environment; Recommendations for Gender-Sensitive Language; Preferred Names and Grammatical Gender for Addressing Students, etc.

- **The filling of leadership positions (including gender balance in leadership positions, see Table 4.7.1)**

Managerial positions related to R&D&I at BUT are filled through **open selection procedures**, in line with **OTM-R principles**, as outlined in [chapter 4.6](#). All job postings are also published in English to ensure transparency and inclusivity.

BUT aims to achieve the **highest possible gender balance** in its decision-making bodies, including university management, the Academic Senate, and various committees. As of 2024, **two female Vice-Rectors** and a **female Bursar** serve alongside the Rector, Chancellor, and four male Vice-Rectors. Within the Rectorate's supporting departments, **9 men and 8 women** currently serve as heads of the departments. Compared to 2020, the number of women in senior positions increased by two. However, men still predominate, and although several measures to promote gender balance have been implemented, **progress remains gradual**.

As shown in **Tables 5.1.1–5.1.3**, women remain underrepresented in academic and managerial positions. To address this, BUT is actively promoting women's participation in science and engineering fields—for example, through public engagement initiatives such as [this article on women in science](#).

An example of BUT's commitment to achieving better gender balance among experts in technical fields is the self-imposed minimum target of 30% female evaluators for the 2024 evaluation of

research, other creative activities and doctoral studies (see [chapter 4.3](#), example 3). In the end, women made up 33% of the evaluation panels.

• Nominations to professional bodies

BUT staff are nominated to professional bodies based on **expertise and experience**, in line with principles of **transparency and non-discrimination**. Gender balance is encouraged in BUT bodies. Given the technical focus of the University, this is achieved according to the capabilities of the individual Faculties and Institutes under whose responsibility nominations to professional bodies fall.

A positive example is the **BUT Ethics Committee**, which currently consists of **6 women and 4 men**, advising the Rector on equal treatment, ethics, and social safety.

• Evaluation and remuneration

The evaluation of employees at BUT is governed by [Guideline No. 15/2024 - Career Rules](#), while remuneration is regulated by the [BUT Wage Rules](#).

Both frameworks adhere to the principles of **transparency and non-discrimination**. Tariff-based wages are **gender-neutral**, meaning that employees in the same tariff category receive equal pay regardless of gender.

All BUT employees undergo **annual performance appraisals** conducted by their immediate supervisors. For academic and research staff, evaluations are carried out using the **electronic Academic Staff Evaluation System (SHAP)**, which documents outcomes in teaching, research, creative activities, personal development plans, and results of evaluation interviews between the employee and their supervisor. A unified system for the evaluation of **non-academic staff** was established.

• Measures to reconcile the work and family life of researchers (flexible working hours, flexible forms of work, maternity/parental leave management, facilitating childcare/dependent care, age management in relation to gender)

BUT is committed to helping all employees, including researchers, **balance their professional and personal lives**. Where needed, employees can request adjustments to their working conditions in line with **Article 12 of the Career Regulations**—this includes **part-time work, flexible working hours, and teleworking**.

Internal data show that **working from home** is increasingly used. In 2024, the number of approved home office days rose from **22,436 to 25,953**, with the **largest increase (1,044 days)** recorded at the **CEITEC research institute**.

Researchers can also access employee benefits related to childcare. These include contributions toward the care of children under six years of age, covering costs such as placement in the [Edisonka children's group](#) or fees for public and private preschool facilities. In 2024, **152 researchers (14.3% of all researchers)** received this allowance, including **31 women (20.4%)**.

Additional support is also available at the **faculty level**. Common measures include **adjusting teaching schedules** to accommodate family responsibilities. Researchers on maternity or parental leave can often continue **part-time teaching or research activities**, if they choose to do so.

A typical example of tailored support is that of a **foreign researcher** employed full-time, who receives the childcare allowance while using the **Edisonka children's group**, which welcomes children **without Czech language skills**.

BUT continues to promote inclusive and flexible policies that respond to the diverse needs of its academic and research community, supporting a better work–life balance across all career stages.

• **Measures to eliminate negative workplace behaviour such as mobbing and sexual harassment**

BUT maintains a **zero-tolerance policy** towards all forms of undesirable workplace behaviour. The University is committed to providing a **positive, respectful, and safe environment** for work and study.

In **2022**, BUT launched the [Social Safety website](#), followed by active participation in two national projects on [academic ethics](#) and social safety in 2022 and 2023. These focused on preventing unethical behaviour and promoting victim support at Czech universities.

In **2023**, BUT established the position of [Coordinator for Social Safety](#) (ombudsperson role) and created a network of trained **contact persons** from both staff and student communities. These individuals, trained in cooperation with the [Mobbing Free Institute](#), are authorised to receive and handle reports of social safety violations.

To ensure accessible and confidential reporting, **“trust boxes”** were installed at all faculties and university institutes. In addition, employees and students can use the dedicated email addresses: socialnibezpeci@vutbr.cz or socialsafety@vut.cz.

In **2024**, the social safety team was reinforced with a new coordinator, and the responsibilities of focal points were formally defined in the revised [Guideline No. 12/2024 – Social Safety at BUT](#).

To raise awareness, **e-learning courses on social safety and equal opportunities** are in development for staff and students. These will be tailored to different groups and **piloted in 2025**.

BUT also joined the [European Network of Ombuds in Higher Education \(ENOHE\)](#). Social safety staff attended the 2024 ENOHE conference in Portugal, establishing lasting international cooperation.

Due to the sensitive nature of these cases, no specific examples are publicly shared. However, an overview of addressed topics can be found in the [Report of the Social Safety Coordinator at BUT 2022–2024/03](#).

4.7.1 Gender balance in management positions

Senior staff	2020		2024	
	Men	Women	Men	Women
Rector	1	0	1	0
Vice-Chancellor	4	1	4	2
Dean ¹⁹	8	0	8	0
Academic Senate	144	52	147	55
Scientific/Artistic/Academic Council	293	45	298	50
Quaestor	1	0	0	1
Board of Directors	14	2	14	2

Note: If one person holds more than one of these positions within the HEI, he/she will be counted in each.

¹⁹ or other head of a relevant work unit of a higher education institution under Section 22(1) of the Higher Education Act performing R&D&I activities, regardless of the designation.

4.8 Mobility of academic and research staff (including sectoral and inter-sectoral mobility)

The HEI shall describe in a concise and structured manner its strategies and objectives for the mobility of academic and research staff (including PhD students), with particular emphasis on mobility related to the development of excellent science and interdisciplinary (intersectoral) mobility. The HEI shall identify potential barriers to mobility, including gender-based barriers. The HEI shall provide information on long-term stays abroad by its own academic staff or, conversely, by foreign staff at the HEI being evaluated.²⁰

The achievement of the set objectives will be demonstrated by the HEI by describing specific examples of mobility or by brief statistics on mobility during the period of 2020–2024.

Maximum 500 words plus 200 words for each example given (max. five examples with a specific description of the relevance of mobility to the stated objectives).

Self-assessment:

Mobility of academic and research staff is a strategic priority at BUT, closely linked to the University's goals of building excellent science, enhancing international cooperation, and fostering intersectoral collaboration. Mobility activities are centrally coordinated by the [the Vice-Rector for Internationalisation and External Affairs](#) and implemented by the [Department of Internationalisation](#), which also oversees support services such as the [Welcome Service](#) and [Admission Office](#).

In 2024, BUT adopted the **Concept for the Development of Mobility Programmes** aimed at structuring and broadening the scope of mobility opportunities for both students and staff. This includes both traditional academic mobility and newer formats such as **Blended Intensive Programmes**, **mobility windows**, and targeted **scholarship schemes**.

BUT's mobility strategy includes partnerships with foreign institutions, cooperation through international networks, participation in international projects, and the implementation of diverse mobility schemes.

a) Partnerships with foreign institutions

BUT focuses on strategic regions for international cooperation and uses an internal tool – the BUT Strategic Territories Assessment Manual – to guide the development of partnerships. It also follows an internal Methodology for Concluding International Contracts when signing or renewing Memoranda of Understanding, which are publicly available on the [university website](#).

b) International networks and alliances

- BUT is an active member of the prestigious [CESAER network](#), hosting its Learning and Teaching Task Force in spring 2024 and preparing to host the CESAER Annual Meeting in 2025.
- The University is a part the [European University Alliance EULIST](#), composed of ten European institutions. In May 2024, the Rector of BUT, Ladislav Janíček, was elected President of the Alliance.
- BUT also engages with the [European University Association](#) (EUA), with the Rector serving on the EUA Advisory Group for Financially Sustainable Universities.
- In addition, BUT cooperates with the [University Alliance of Taiwan](#) (UAAT), offering scholarships for researchers and PhD students.

²⁰ Long-term mobility means an uninterrupted period of more than three months.

c) International projects

BUT participates in numerous international projects, including those funded by Horizon Europe and other programmes, fostering mobility through collaborative research and innovation.

d) Mobility programmes

The most widely used mobility programme at BUT is **Erasmus+**, which is managed according to the internal Erasmus+ Concept. Other opportunities include **AKTION**, **CEEPUS**, and **scholarships such as the Barrande Fellowship**. BUT also supports **Blended Intensive Programmes** formats and has introduced a Mobility Window—a specific period in study plans allocated to international mobility.

In 2024, BUT launched the **BUTalent Scholarship Programme** for talented international students studying in English programmes. Research excellence is further supported by the **BUT Scholarship and Partnership Programme for Excellence**, funding both outbound and inbound mobility of top researchers and students. Intersectoral mobility is promoted through internships, joint projects, and collaboration with industry in areas such as technology transfer.

e) Addressing barriers to mobility

BUT recognises various barriers to mobility, including financial limitations, administrative complexity, and gender imbalances, especially in technical fields. To address these, the University offers co-financing, comprehensive support through the Welcome Service, and inclusive, gender-sensitive policies. Family-friendly measures and remote work options support researchers with family responsibilities in participating in mobility activities.

Mobility statistics for the last five years:

Mobility BUT	2020	2021	2022	2023	2024
Outgoing students	457	545	819	887	879
Incoming students	459	519	689	696	742
Outgoing staff	108	278	684	756	672
Incoming employees	42	130	219	212	394

More about available programmes and support can be found at:

<https://www.vut.cz/en/students/going-abroad/internships>

Examples of specific mobilities:

1 Ing. Radovan Galas, Ph.D., Faculty of Mechanical Engineering, Outgoing Mobility (MSCA-RISE)

Ing. Radovan Galas, Ph.D. participated in a research internship at the **Railway Technical Research Institute in Tokyo, Japan** as part of the **H2020-RISEN project** (MSCA-RISE). The mobility followed his earlier internship at Southwest Jiaotong University in China and focused on the **impact of extreme weather on rail infrastructure**.

This experience significantly advanced his academic career. Upon returning, he **established a research group** at the Department of Tribology, focused on **sustainable rail traction and friction control**. The results of his mobility contributed directly to a **Technology Agency (TA CR) ZÉTA project** on rail noise mitigation and led to the development of a **Field Tribometer**—a device for assessing rail adhesion.

He continues this research within the **MEBioSys** excellent research project and secured a **TA CR Trend project** in 2024 on **eco-friendly friction control using water**. He actively transfers research into teaching and coordinates the Master's programme in Structural Engineering. In 2025, he began his **habilitation process**.

His case demonstrates how international mobility can catalyse scientific excellence, innovation, and career development at BUT.

② **Assoc. Prof. Vít Chlebovský, Faculty of Business and Management, Outgoing: Research into University Centres of Support of Entrepreneurship in the USA, Case Western Reserve University (US Fulbright Program, 8/2023 - 12/2023)**

Assoc. Prof. Vít Chlebovský completed a **Fulbright research stay** (August–December 2023) at **Case Western Reserve University, USA**, focusing on **university entrepreneurship centres** and their role in fostering innovation ecosystems.

His qualitative research included case studies based on interviews, observations, workshops, and focus groups. The study resulted in a set of **best practices** covering centre structure, funding models, sustainability, and impact assessment. These were compared with leading European examples (in Scandinavia, Switzerland, Germany) and the situation at BUT.

Based on his findings, he formulated **recommendations for developing entrepreneurship support structures** at BUT and beyond. His research aligns closely with the University's goals in **knowledge transfer** and the promotion of innovation culture.

The outcomes of this mobility are already being implemented at BUT through the [ContriBUTe Innovation and Entrepreneurial Ecosystem](#), which supports student and staff entrepreneurship. His expertise is also being shared across faculties through interfaculty activities and strategic initiatives.

This mobility supported BUT's mission to connect science and practice and demonstrates the value of international experience in strengthening institutional innovation capacity.

③ **Prof. Monika Konrad, Poland, Faculty of Architecture, Incoming mobility (9/2023 - 12/2023)**

Monika Konrad, currently a Deputy Director of the City of Warsaw's Municipal Office of Architecture and Spatial Planning, is a leading expert in urban design and planning. She was responsible for the Strategic Master Plan of the City of Warsaw.

Her stay at the **Faculty of Architecture at BUT** as a visiting academic was supported by the **BUT Scholarship and Partnership Programme for Excellence** and faculty funds. She led an **international design studio** attended by Czech and foreign students and participated in **doctoral teaching**. The student projects under her supervision focused on urban regeneration strategies and were exhibited at the **Architecture Pavilion in Warsaw** in 2024.

In November 2023, Monika Konrad was appointed as an **Extraordinary Professor at BUT**. She **guarantees a recently accredited joint Master's degree in Integrative Urban Studies** that is organized together with the **European Humanities University Vilnius and the University of Wrocław**. She also became a representative of FA BUT at AESOP – Association of European Schools of Planning. Ms Konrad also leads **joint workshops between the FA BUT and the Architectural Association School of Architecture in London**. The projects the students worked on under her supervision aimed to develop a regeneration strategy for an area of the city in need of transformation and different design solutions for two sites in Brno, based on strategic and programmatic research carried out during the course of their studies.

4 Anubham Baksi, Singapore, Faculty of Electrical Engineering and Communication, Incoming mobility (9/2023 - 12/2023)

In the autumn semester of 2023, **Anubham Baksi**, a leading researcher in **cryptographic security and hardware vulnerability**, joined the Faculty of Electrical Engineering and Communication (FEEC) at BUT for a **research and teaching stay**.

His expertise includes **side-channel analysis** and **embedded system security**, with several publications presented at top-tier conferences such as **ASIACRYPT**. During his stay, he joined two applied research projects focused on the **AI-based verification of cryptographic devices** and **post-quantum network security**.

In addition to contributing to these research teams, Mr. Baksi delivered **two expert lectures** for students and staff, significantly enriching the faculty's knowledge base and encouraging international collaboration in the rapidly evolving field of cybersecurity.

His presence fostered **interdisciplinary exchange** between cryptography, AI, and hardware security. It also initiated **longer-term cooperation** between his home institution in Singapore and FEEC researchers, paving the way for joint publications and future mobility.

This mobility reflects BUT's goal of attracting **excellent international researchers**, integrating them into ongoing research, and using their expertise to develop both R&D excellence and advanced teaching.

5 Assoc. Prof. Karel Sedlář, Ph.D., Faculty of Electrical Engineering and Communication, Outgoing mobility: Ludwig-Maximilians-Universität München, Germany, repeated long-term stays

Assoc. Prof. Karel Sedlář has undertaken a series of **long-term research stays** at **Ludwig-Maximilians-Universität München**, specifically at the Institute of Computer Science. His work focuses on **biomedical engineering**, one of strategic research areas at the Faculty of Electrical Engineering and Communication (FEEC).

His main research interests include **bioinformatics**, **systems biology**, and the **design of algorithms** to identify and analyse microorganisms that either pose health risks or have technological applications—such as the production of **bioplastics** and **biofuels**. He is currently the principal investigator of a prestigious **Junior Star grant** awarded by the **Czech Science Foundation**.

His mobility has been instrumental in advancing this research, particularly in projects aimed at mapping the **PHA (polyhydroxyalkanoate) biosynthesis cycle** in prokaryotic organisms. This research contributes to the development of sustainable methods for producing advanced bioplastics and helps streamline **biotechnological processes** for environmental applications.

In addition to his research outputs, his stays in Munich support ongoing **international collaboration**, joint publications, and the integration of frontier science into teaching at BUT. His mobility aligns with BUT's strategic commitment to developing global research links and fostering **cutting-edge science with real-world impact**.

RESEARCH INFRASTRUCTURE

4.9 Research infrastructure

The HEI will describe the system for acquiring/optimizing expensive instruments and equipment, as well as refurbishing outdated expensive instruments. The HEI will also briefly present the internal organisation of the research infrastructure (including technology, expensive instruments, and instrumentation)²¹. The HEI will describe the system of sharing (including external research entities) of instruments and instrumentation, including expensive instruments and instrumentation units, referred to as 'core facilities' (if such a system exists). The HEI will demonstrate the effectiveness of the systems with examples (e.g., specific instruments acquired/optimised and their relevance to the achievement of research objectives, examples of sharing of expensive instruments and instrumentation, statistics on sharing of expensive instruments and instrumentation, etc.). The HEI will briefly comment on the data in Table 4.9.1.

The HEI shall also indicate whether it hosts large research infrastructure projects. The name and a brief description will be provided.

Maximum 500 words plus 200 words for each example given (max. five examples).

• The internal organisation of the research infrastructure

Core Facilities and Large Research Infrastructures

BUT is the host institution of one of the major large research infrastructures – [CzechNanoLab](#). CzechNanoLab consists of two locations: [CEITEC Nano](#), situated at CEITEC BUT, and the Laboratory of Nanostructures and Nanomaterials (LNSM) in Prague. CEITEC Nano provides users with the capability to fabricate nanostructures, analyze their shape and chemical composition, and measure their often-unique properties. The facility offers advanced equipment for **nanofabrication, nanocharacterization, structural analysis, and X-ray tomography**, enabling the complete production and characterization of nanostructures and nano-devices at the sub-nanometer level in an ultra-clean environment.

CzechNanoLab plays a crucial role in the national innovation ecosystem, particularly in the **priority area of semiconductor chips**. As the only facility of its kind in the Czech Republic, it provides a **comprehensive set of instrumentation and expertise** necessary for semiconductor chip research and development, accessible to both corporate and academic researchers as well as students.

The CEITEC Nano research infrastructure currently operates **over 80 instruments** and employs a **research and technical staff of more than 30 experts** across various specializations. The infrastructure follows the **open-access model**, in line with the **European Charter for Access to Research Infrastructures** (user guidelines available [here](#)). More than **400 users** utilize the facility annually, collectively logging over **100,000 instrument hours** in 2023.

BUT is also a **partner in the [Czech-Biolmaging](#) research infrastructure**, further strengthening its role in national and international research collaborations.

Further research infrastructure

Most of the state-of-the-art research infrastructure at BUT, apart from CEITEC Nano stated above, is concentrated in the [Centres of Excellence in Research Infrastructure](#). These centres were established through projects funded by the Operational Programme Research and Development for

²¹ The definition of research infrastructure is set out in the Framework for State Aid for Research, Development and Innovation (2014/C 198/01) and Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in accordance with Articles 107 and 108 of the Treaty.

Innovation. The major instruments are typically shared within faculties and, can be accessible across the University. Additional, lower-cost instruments are located in individual laboratories.

- **System for acquiring/optimizing expensive instruments and refurbishing outdated expensive instruments**

BUT maintains a Capital Asset Reproduction Fund, financed from its own resources, to support the renewal of research infrastructure. In addition, the University actively seeks to leverage grant funding and external projects to further invest in the modernisation of its research equipment (see e.g. CzechNanoLab+ project example 1+2 below).

- **Sharing instruments and instrumentation**

BUT is strongly committed to **expanding the shared use of research equipment** and improving both the scope and quality of services provided to users. To support this goal, a comprehensive **monitoring process** is currently underway for all research instruments with an acquisition value exceeding CZK 0.5 million. For each instrument, detailed data is being collected, including technical specifications, usage terms, internal and external sharing policies, availability of operational support, and other relevant information.

Additionally, efforts are being made to **assign each instrument a unique [PIDINST](#) identifier** in accordance with **Research Data Alliance recommendations**, ensuring standardized tracking and accessibility. The ultimate goal is to **establish a centralized research equipment database**, similar to the existing **CEITEC Nano system**, with an **integrated booking system and digital lab notebooks** for efficient equipment management.

Examples:

①+② CzechNanoLab success in large research infrastructures evaluation + further progress since 2021

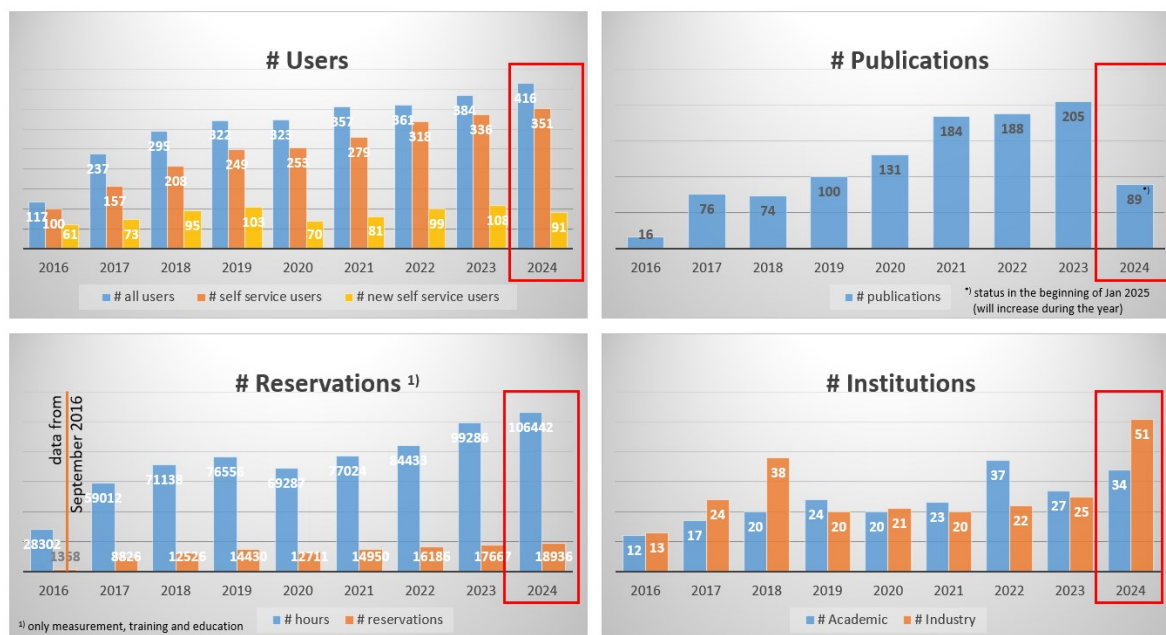
The excellent quality of the CzechNanoLab large research infrastructure (LRI), of which CEITEC Nano is a key component, is evidenced by the **results of regular evaluations conducted by the Ministry of Education, Youth and Sports CR**. The most recent evaluation took place in 2021.

The evaluation was based on a robust international peer-review process combining panel assessments and remote expert reviews. The **methodology, inspired by the [European Strategy Forum on Research Infrastructures \(ESFRI\)](#)** standards, involved six disciplinary panels and independent reviewers, and assessed the scientific quality, operations, performance, and strategic development of large research infrastructures in the Czech Republic.

CzechNanoLab has been rated Excellent for its outstanding performance as an LRI in the field of nanotechnology. Here is the summary of overall outcomes of the evaluation: CzechNanoLab plays a key role both within the Czech Republic and in the broader European research landscape. The infrastructure's scientific scope—spanning material synthesis, characterization, device fabrication, and theoretical modeling—is highly integrated and aligned with global research trends. Particular strengths include its excellent scientific output, high number of users, strong organization, professional management, and effective support for local business and researcher training. CzechNanoLab also stands out for its strategic role in major European initiatives, especially EuroNanoLab, and for its clear user policy and high societal relevance. While no major weaknesses were identified, key recommendations include securing funding for equipment renewal, strengthening industrial engagement, and fostering closer collaboration with other Czech

infrastructures. Overall, CzechNanoLab demonstrates a high level of excellence and strategic importance for advancing nanoscience and innovation. The **whole report** is accessible [here](#).

Since the 2021 evaluation, CzechNanoLab has continued to strengthen its position and performance. The infrastructure has recorded a steady increase in the number of users, the number of institutions accessing the open-access facilities, as well as in the volume of reservations and research outputs derived from the use of CzechNanoLab services. These developments underline the infrastructure's ongoing commitment to excellence and relevance for both academia and industry. Basic statistics are provided below, and further details can be found in the [accompanying presentation](#).



③ Acquiring expensive instruments – CzechNanoLab+ project

The **CzechNanoLab team**, led by coordinator **Michal Urbánek**, achieved outstanding success with the [CzechNanoLab+ modernization project](#) in the [OP JAC \(Johannes Amos Comenius\) Research Infrastructures I](#) funding call, securing **78 out of 80 points**, making it the **most successful project in this call**. The CzechNanoLab+ project, running from early 2024 to the end of 2026, aims to **expand the range of services provided by the infrastructure** by introducing new cutting-edge technologies for **nanofabrication and characterization** that were previously unavailable. The second key goal of this modernization project is the **replacement of outdated core equipment**, ensuring **higher-quality data acquisition and faster service provision** for a larger number of users.

The project plans to procure **15 new technology units**, ranging from deposition systems and state-of-the-art microscopes to analytical instruments and microscopic-scale 3D printing devices. The project received **funding of 361 million CZK (14.5 mil. EUR)**, with two-thirds allocated to CEITEC Nano at CEITEC BUT in Brno and one-third to LNSM at the Institute of Physics of the Czech Academy of Sciences (FZÚ) in Prague, the second node of the CzechNanoLab research infrastructure.

④ Research Infrastructure Synergies within the EULIST Alliance

As a member of the [European University Alliance EULIST](#), which brings together ten universities across Europe including BUT, Brno University of Technology actively contributes to one of its key initiatives: the creation of a **Platform for the Capitalisation of Synergies in Research and Innovation (R&I) Infrastructures**.

This platform aims to connect and make accessible the diverse R&I capabilities and infrastructures of all EULiST partner universities. It will support research collaboration, as well as education and training, by enabling open access to tools, data, platforms, and laboratories across the Alliance.

The sharing of infrastructure and resources will be facilitated through the **EULiST Digital Campus**, which serves as a central entry point to joint services and information. Within this framework, common guidelines for the exchange of researchers will also be developed, aiming to promote and simplify researcher mobility within the EULiST network and beyond.

5 Core Facilities of Faculty of Fine Arts

The **Faculty of Fine Arts at BUT** supports research, development, and innovation (R&D&I) through a well-developed system of **core facilities**, consisting of specialised **cabinets and workshops** (<https://www.favu.vut.cz/en/facilities>) that offer access to advanced technologies and expert consulting. These facilities serve both **internal users** across the University and **external partners**, increasing resource efficiency and supporting interdisciplinary collaboration.

The core facilities include a range of technologies, from **3D printing and fabrication** to a **professional audiovisual studio**. A centralised **reservation system** allows access to studios and equipment such as the **audio and video studio** or **AV editing rooms**:

<https://www.favu.vut.cz/en/facilities/reservation>

Academic and artistic research projects at the faculty benefit directly from this infrastructure, which is also available for **commercial use**. Through **collaboration with cultural institutions, industry**, and other organisations, the faculty contributes to **technology transfer** and **knowledge dissemination**.

Commercial use includes **technology rental, consulting, and expert services**, helping to generate funding for further infrastructure development. These partnerships also strengthen the faculty's position within the regional **innovation ecosystem** and promote long-term cooperation between academia and practice.

More information available at <https://www.favu.vut.cz/en/facilities>.

4.9.1 Summary of expenditure/costs on research infrastructure and equipment for the period under review (including related non-investment and personnel costs).

Costs/expenses in thous. CZK/EUR/year		2020	2021	2022	2023	2024	Total value of assets ²²
Costs/expenses related to the acquisition of small fixed assets for R&D&I CZK	Thous. CZK	55 447	52 234	38 363	37 343	43 324	226 711
	EUR	2 187	2 061	1 513	1 473	1 709	8 943
Cost of repairs and maintenance of equipment	Thous. CZK	25 913	20 837	19 251	20 930	20 535	107 465
	EUR	1 022	822	759	826	810	4 239
Acquisition of tangible (DH) and intangible (DN) assets for R&D&I (investments)							
Of which software	Thous. CZK	7 760	19 899	1 024	2 984	4 058	35 725
	EUR	306	785	40	118	160	1 409
Of which other intangible fixed assets	Thous. CZK	237	17	211	0	0	465
	EUR	9	0,7	8	0	0	18
Of which land, buildings and structures	Thous. CZK	59	24 605	121	0	0	24 784
	EUR	2	971	5	0	0	978
Other intangible fixed assets (machinery, apparatus, equipment, etc.	Thous. CZK	73 797	127 503	70 107	79 098	75 155	425 659
	EUR	2 911	5 030	2 766	3 120	2 965	16 791
Total infrastructure spending in years ²³	Thous. CZK	163 212	245 095	129 076	140 355	143 072	820 810
	EUR	6 438	9 668	5 092	5 537	5 644	32 379

²² Enter the sum of the row.

²³ Enter the sum of the column.

FINANCES

4.10 Budget and structure of financial resources

The HEI shall provide and comment on an overview of the total R&D&I budget in the period of 2020–2024, broken down by organisational units of the evaluated HEI and by source of funds (Table 4.10.1). The HEI shall also comment on the shares of total costs/outputs covered by public and non-public sources by type of R&D&I for the period under evaluation as shown in Table 4.10.2.

As complementary data, the university will provide an overview of prestigious research projects obtained during the period of 2020–2024 (ERC²⁴, MSCA²⁵, HHMI²⁶, HFSP²⁷, NSF²⁸, Horizon Europe²⁹, NIH³⁰, Wellcome Trust³¹, EDF³², OP JAK³³, OP TAK³⁴, NPO³⁵, GA ČR³⁶, TA ČR³⁷ etc.). Include information on the amount of funding received and whether the HEI were principal investigator or co-investigator in Tables 4.10.3, 4.10.4 and 4.10.5.³⁸

In addition, the HEI will describe in more detail up to five of the most important projects from the list of prestigious individual projects abroad (ERC, MSCA, HHMI, HFSP, NSF, etc.), providing basic information at the HEI's discretion and regardless of the funder: title, field of expertise, agency, amount of funding, other project participants, and other relevant information as appropriate.

A maximum of 500 words plus 200 for each example of a prestigious international individual project given.

²⁴ The European Research Council (ERC) is part of the 'Excellent Science' pillar of Horizon Europe. The ERC funds cutting-edge research by supporting individual Principal Investigators and their research teams.

²⁵ Marie Skłodowska-Curie Action (MSCA) is part of the "Excellent Science" pillar of Horizon Europe and is also aimed at supporting young researchers, including PhD students.

²⁶ Howard Hughes Medical Institute - a non-profit organization in the USA significantly supporting international biomedical research.

²⁷ Human Frontier Science Program - an international programme to support research, particularly in the natural sciences and computer science.

²⁸ National Science Foundation (USA).

²⁹ Horizon Europe - the EU's 9th Framework Programme for research and innovation, running from 2021-2027.

³⁰ National Institutes of Health (NIH) - an agency under the United States Department of Health and Human Services. NHI is a major player in project support for biomedical research.

³¹ major UK private foundation supporting mainly biomedical research.

³² European Defence Fund.

³³ Operational Programme Jan Ámos Komenský - Priority 1 - Research and Development - multiannual programme under the Ministry of Education, Youth and Sports. Within the framework of the OP JAK it is possible to draw financial resources from the European Structural and Investment Funds (ESIF) in the period 2021-2027.

³⁴ Operational Programme Technologies and Applications for Competitiveness. The European Regional Development Fund (ERDF) is available in the period 2021-2027 to co-finance business projects in the areas of research, development and innovation, digitalisation and digital infrastructure, business development, smart and sustainable energy and the circular economy.

³⁵ National Recovery Plan - under Pillar 5 - Research, Development and Innovation of the National Recovery Plan, the Recovery and Resilience Facility (RRF) is available for the period 2022-2026.

³⁶ Grant Agency of the Czech Republic.

³⁷ Technology Agency of the Czech Republic.

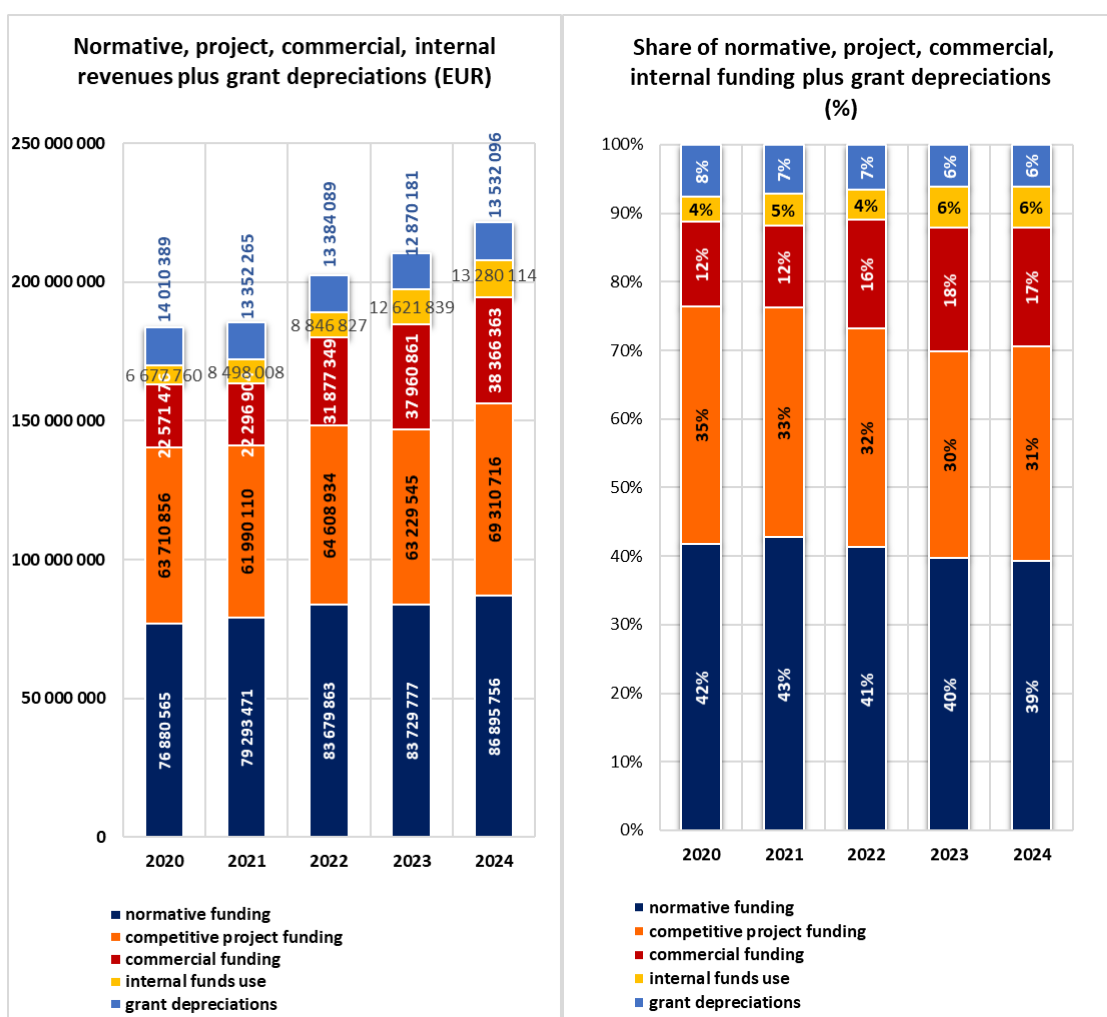
³⁸ The military and the police HEIs, as parts of the organisational unit of the state, are treated specifically in terms of the possibility to participate in the projects.

Self-assessment:

• R&D&I Budget

The total R&D&I budget for BUT over the period 2020–2024 demonstrates a stable and increasing trend in funding across organisational units. The primary sources of funding include **national grants, institutional support, international programs, and industry collaborations**. Notable variations exist among units, reflecting their research focus and external engagement.

Funding of Czech universities, including BUT, consists of **3 principal categories of sources**, i.e., **normative** (formula/criteria based) funding, **competitive grant funding** (project-based) and **commercial contract-based funding** plus some additional internal funds used for funding and funding of grant depreciation - see pictures below, which demonstrates last 5-year nominal allocations of funding and their percentual shares.



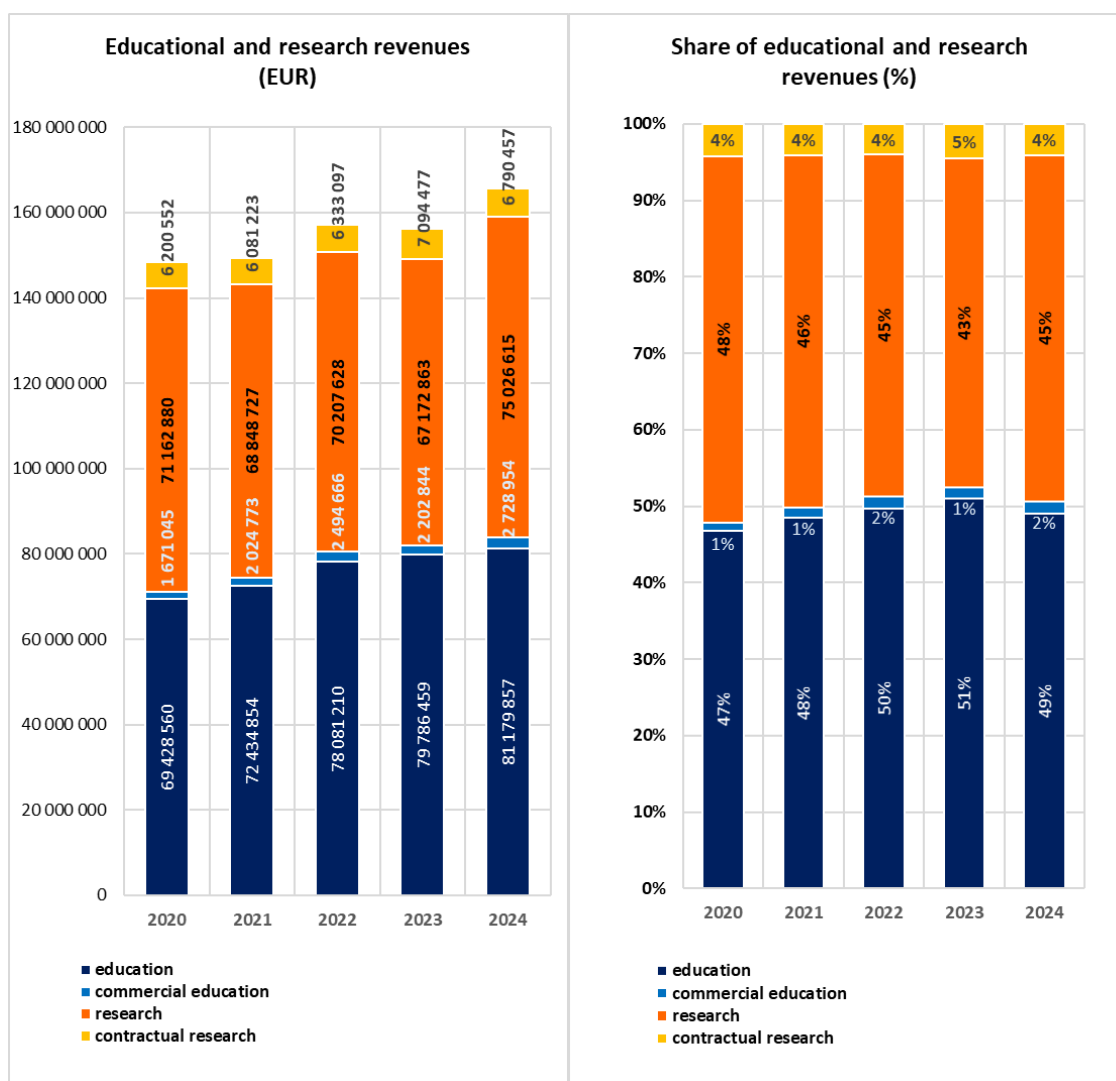
Comparison of funding of two principal areas of BUT activities, i.e. education and research, are demonstrated in the graphs below. Both education and research revenues have 2 components each, i.e. public grants revenues and commercial (contract-based) revenues.

In the field of **education funding** includes:

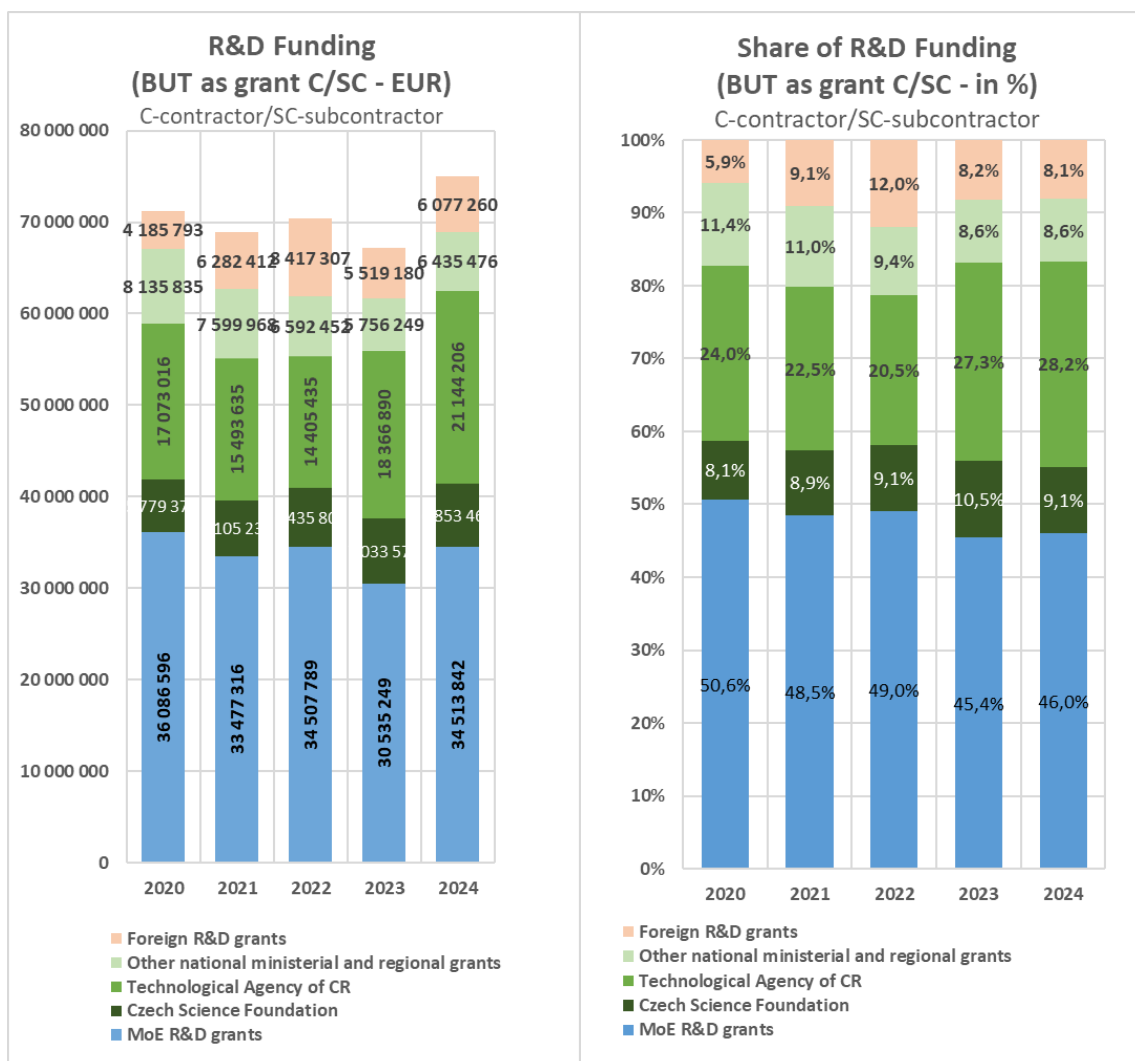
- public funding of studies in study programmes (formula-based, criteria-based funding) and
- commercial revenues for continuing professional development courses paid by participants.

In the field of **research**, the funding consists of:

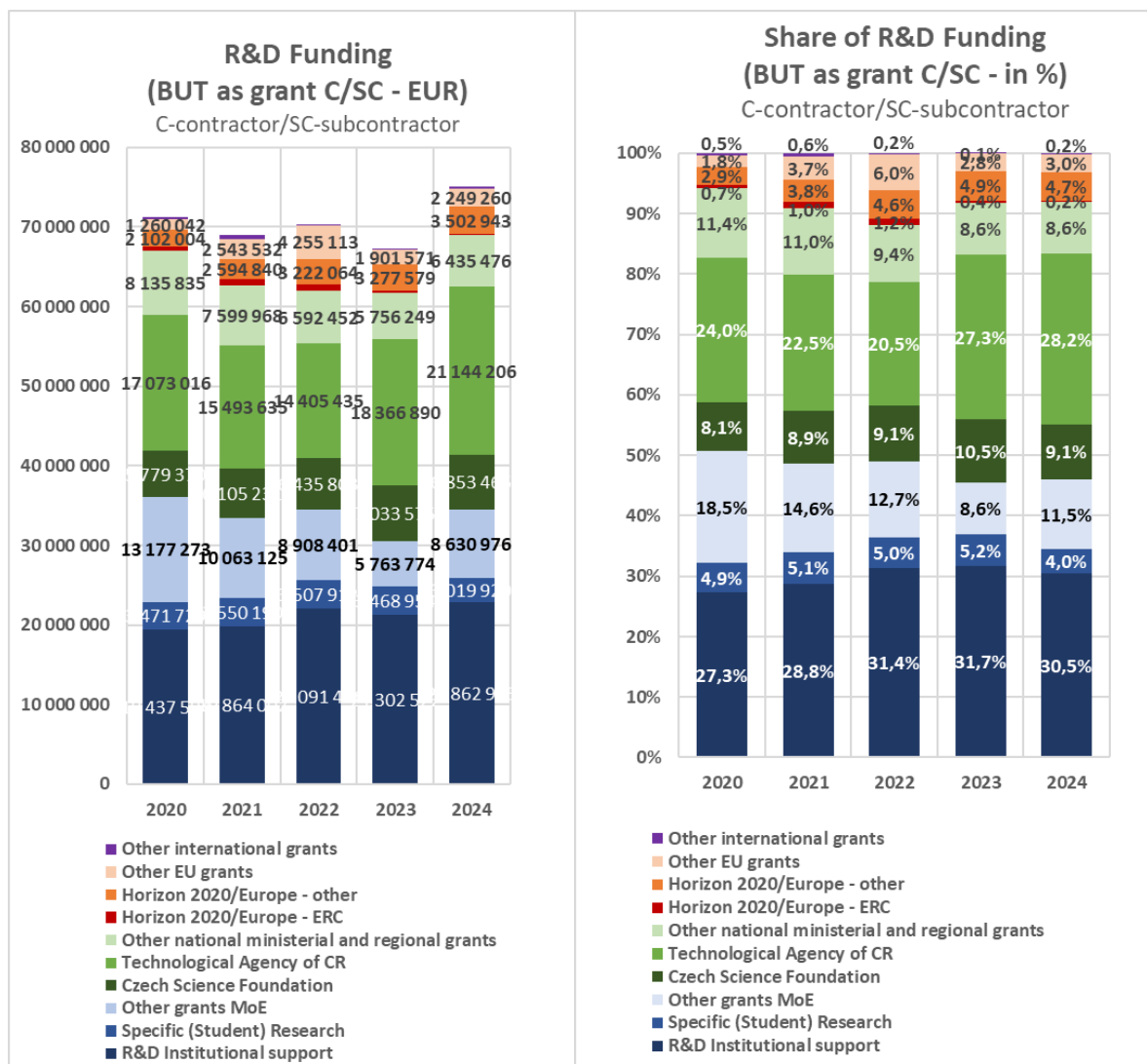
- competitive project-based public grants
- commercial contract-based funding – contractual research



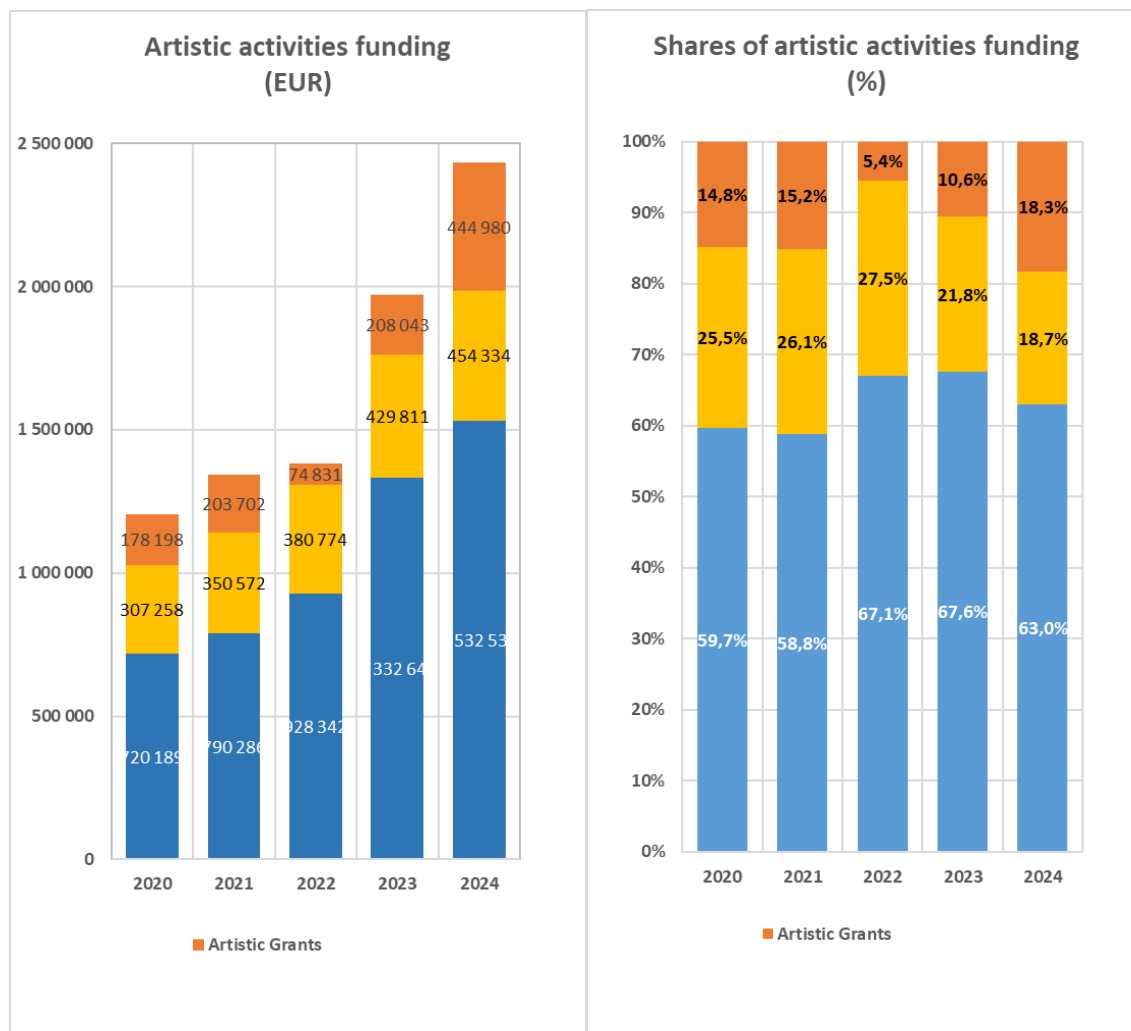
Structure of sources of public research funding are provided in the pictures below. One of principal problematic aspects of research funding in the CR is its fragmentation into several tens of sources (linked with the grant providers), e.g., in 2024 BUT operated 41 sources of funding of R&D projects with specific rules applied on cost eligibility. Each source of funding usually has its own eligibility rules for the use of project money. This results in quite high, both individual and institutional, administration intensity of project implementation. It also requires relevant project administration skills of project support personnel.



More detailed structure of principal funding sources is demonstrated in the picture below.



Apart from research, there are also artistic activities conducted by the Faculties of Fine Arts and the Faculty of Architecture, but also by the Faculty of Mechanical Engineering (Industrial Design), by the Faculty of Civil Engineering (Architecture) and Faculty of Electrical Engineering (sound mastering in cooperation with the Janacek Academic of Musical Arts – see graphs below).



• Most important projects

Between 2020 and 2024, BUT was actively involved in European Commission research and innovation programmes, particularly **Horizon 2020 (H2020)** and **Horizon Europe**. This engagement reflects the University's commitment to excellent science and international research collaboration.

During 2020–2024, BUT submitted **534 project proposals in H2020 and Horizon Europe**, with **71 accepted (21 coordinated by BUT)**. A total of 86 projects were under implementation in the evaluated period. BUT also coordinated **HungryEcoCities** (Pillar II) and **BAANG** (Widening Participation), and participated in highly competitive EIC Pathfinder Open 2022 with the **METASPIN** project.

In **Horizon Europe**, BUT participates in numerous projects under the *Excellent Science* pillar. These include e.g. the [EXCITE2 project](#) (EXCITE²: Enhanced X(cross)-disciplinary Community-driven Imaging Technologies for Earth and Environmental material research), which offers transnational access to advanced imaging technologies, and the **MSCA project RELIANCE** (REal-time characterization of

Anisotropic Carbon-based technological fibres, films and composites) where BUT plays a key role in developing innovative materials and production processes for industrial use.

In **Horizon 2020**, BUT focused on **Marie Skłodowska-Curie Actions (MSCA)** and **European Research Council (ERC) programmes**. It coordinated the **MSCA project LoCatStop**, aimed at innovations in renewable energy. BUT researchers also achieved success in ERC-funded projects such as **THz-FRaScan-ESR**, **ToMeTuM**, and **OPTEL-MED** (see the description below), which advance technologies in MRI diagnostics, cancer treatment, and implantable neural stimulators. These projects brought nearly €5 million in ERC funding to the University and Czech research.

① Project THz Frequency Rapid Scan - Electron Spin Resonance spectroscopy for spin dynamics investigations of bulk and surface materials (THz-FRaScan-ESR) - Petr Neugebauer, ERC Starting Grant

January 2018 to December 2022, 2 million EUR.

The main research focus of Dr. Petr Neugebauer is on method development of **magnetic resonance spectroscopy, especially Electron Spin Resonance (ESR)**. The project addressed major limitations of existing high-frequency electron spin resonance (HFESR) instruments, which were constrained to single frequencies and small sample volumes. These constraints hindered progress in dynamic nuclear polarization (DNP) and prevented the development of zero-field quantum computing. To overcome these challenges and enhance sensitivity in nuclear magnetic resonance (NMR) and magnetic resonance imaging (MRI), Petr Neugebauer developed a novel and globally unique method: broadband terahertz frequency rapid scan (FRaScan) ESR, paving the way for real-time observation of molecular interactions and complex biological systems such as ribosomes.

Further achievements of Petr Neugebauer following his ERC Starting Grant:

- <https://www.ceitec.eu/revolutionary-spectrometer-will-help-scientists-understand-protein-structure-and-design-new-drugs/t11415>
- <https://www.vut.cz/en/but/news-f19528/revolutionary-spectrometer-developed-by-ceitec-but-team-wins-golden-amper-2025-award-d284490>

② Project Towards the Understanding a Metal-Tumour-Metabolism (ToMe TuM) - Vojtěch Adam, ERC Starting Grant

January 2018 to December 2022, 1.4 million EUR

Prof. **Vojtěch Adam** (†2024) focused his research team on the research of a **protein called metallothionein, which has the ability to bind metals**. He believed to prove that this protein is one of the **key factors in preventing the emergence of resistance to cancer treatment with metal-based medicines**. If successful, confirmation of this fact could contribute to more effective treatment of cancer in the future. Despite the thorough investigation, this question still remains to be answered. Unfortunately, prof. Adam has tragically died soon after the project ended. Despite this grant was for an individual research group, the prestige of one of the first ERC grants in CEITEC was notable and inspiring for fulfilling the vision and mission of CEITEC organization as well as the whole University.

- <https://www.ceitec.eu/professor-vojtech-adam-is-the-new-holder-of-the-prestigious-erc-grant/t3133>

③ Project, Optoelectronic medicine - nerve cell regulation with light (OPTEL-MED) - Eric Daniel Glowacki, ERC Starting Grant

January 2021 – December 2025, 1.5 mil. EUR

Bioelectronic medicine is advancing rapidly, offering innovative treatments for millions of patients. Dr. **Eric Glowacki's** ERC-funded project aims to revolutionize this field by developing wireless, implantable photovoltaic devices that stimulate the nervous system without bulky electronics or batteries.

The project's core innovation is ultrathin, flexible neural interfaces made from organic semiconductors that absorb near-infrared light—capable of penetrating biological tissue. These materials convert light into tiny electrical pulses that activate specific nerves. By micro-patterning stimulation pixels on biocompatible substrates, the team creates nerve cuff electrodes that are much thinner and less invasive than existing clinical options.

This wireless approach enables precise, localized nerve stimulation, opening new possibilities for treating chronic pain, inflammatory diseases, and neurological disorders. The project also investigates the underlying physics of electrolytic photovoltaic stimulation to ensure safety at light intensities deliverable from outside the body.

What makes this project truly pioneering is its **interdisciplinary approach—combining materials science, bioengineering, and neuroscience to achieve wireless, targeted, and patient-friendly neuromodulation**. By studying how spatial light patterns affect nerve signals, Dr. Glowacki's team aims to advance both medical technology and our understanding of neural control and plasticity. This breakthrough could transform treatment of chronic conditions and redefine how we interface with the nervous system.

- <https://www.ceitec.eu/research-of-eric-glowacki-proves-that-light-is-the-way-to-go-it-should-help-in-neurostimulation/t10889>

④ Project Research and Innovation Center on Advanced Industrial Production (RICAIP II) – Pavel Václavek, H2020 Teaming

January 2019 - December 2025, 3.9million EUR

The **RICAIP** project aims to establish an international **Industry 4.0 hub, introducing a new dimension to multi-site industrial production with strong societal impact**. Its long-term vision is to transform the RICAIP testbed into a European Research Infrastructure. Led by Czech institutions-the Czech Institute of Informatics, Robotics and Cybernetics at CTU and CEITEC at Brno University of Technology - in partnership with Germany's DFKI and ZeMA, the project fosters knowledge transfer and long-term collaboration. This strategic alliance strengthens RICAIP's position as a leader in advanced industrial production research within the European Research Area.

- <https://www.ceitec.eu/connecting-ai-with-industrial-robotics-launch-of-ricaip-project/t10131>

⑤ Project Efficient Finite Automata for Automated Reasoning – Lukáš Holík, ERC-CZ

January 2020 – December 2024, 1.12 mil. EUR, Ministry of Education, Youth and Sports

The project [Efficient Finite Automata for Automated Reasoning](#), led by **Lukáš Holík** (Faculty of Information Technology), was funded through the **ERC CZ scheme, which supports Czech ERC proposals that were highly rated but below the EU threshold for funding**.

The aim was to **improve the efficiency of finite automaton techniques**—core tools in computer science with applications in automated decision-making, formal verification, language processing, databases, and web technologies. While powerful, their practical impact is often limited by scalability issues.

This project addressed those limitations by combining classical automata theory with modern approaches such as lazy evaluation, alternation, symbolic representation, abstraction, and heuristics from SAT/SMT solving. These methods, inspired by advances in software verification and decision procedures, enabled more scalable and effective techniques.

The research led to both theoretical insights and practical tools, contributing to major conferences and journals. Several software tools were also developed as part of the project (see [link](#)).

4.10.1 Total budget of the HEI 2020-2024

Name of the HEI unit	Total budget in thous. CZK/EUR	Percentage of public funding in the Czech Republic	Share of public funding from abroad in % *	Percentage of funding from other sources
Faculty of Fine Arts	32 439/ 1 297 566	90,81%	6,82%	2,37%
Faculty of Civil Engineering	1 186 493/ 47 459 727	85,36%	3,93%	10,71%
Faculty of Mechanical Engineering	2 644 961/ 105 798 437	73,32%	15,54%	11,14%
Faculty of Information Technology	1 031 269/ 41 250 771	79,08%	13,09%	7,82%
Faculty of Architecture	28 703/ 1 148 127	92,44%	4,80%	2,76%
Faculty of Chemistry	535 975/ 21 438 993	86,09%	6,28%	7,63%
Faculty of Business and Management	97 811/ 3 912 433	91,78%	6,55%	1,67%
Faculty of Electrical Engineering and Communication	2 109 873/ 84 394 903	82,27%	9,24%	8,49%
Centre of Sports Activities	3 254/ 130 174	86,24%	13,76%	0,00%
Institute of Forensic Engineering	27 748/ 1 109 903	92,30%	1,67%	6,03%
Central European Institute of Technology (CEITEC)	2 447 924/ 97 916 957	62,54%	32,53%	4,93%
Centre of Information Services	34 798/ 1 391 916	99,96%	0,00%	0,04%
Central Library	57 120/ 2 284 808	88,33%	6,22%	5,45%
Rectorate	67 231/ 2 689 249	100,00%	0,00%	0,00%
Other	4 061/ 162 444	0,00%	100,00%	0,00%
BUT total	10 309 660/ 412 386 408	75,87%	15,87%	8,26%

* incl. EU Structural Funds

4.10.2 Share [%] of total costs/outputs by type of R&D&I paid from public and non-public sources

	2020	2021	2022	2023	2024	Total
Basic research	50,16	48,89	43,62	37,87	41,27	44,36
Applied Research	44,89	42,09	43,13	45,88	44,41	44,08

Experimental development and innovation	4,95	9,02	13,25	16,25	14,32	11,56
Total	100	100	100	100	100	100

Note: For definitions see Definition of Terms in Methodology HEI2025+.

4.10.3 Projects supported by a foreign provider

In the role of beneficiary							
Provider / Investor	Programme/Grant Scheme	Project name	Support (in thousands CZK/EUR)				
			2020	2021	2022	2023	2024
Individually Stated Non-Investment Projects Supported by a Foreign Provider							
EU	FP7 Seventh Framework Programme	Convergence of Electronics and Photonics Technologies for Enabling Terahertz Applications	1061/ 41 869	0/0	0/0	0/0	0/0
		Fractional-order systems; analysis, synthesis and their importance for future design	660/ 26 018	0/0	0/0	0/0	0/0
	H2020 - ERC	Towards the Understanding a Metal-Tumour-Metabolism;	7 872/ 310 548	6 976/ 275 176	5 604/ 221 060	655/ 25 851	0/0
	H2020 - ERC	THz Frequency Rapid Scan - Electron Spin Resonance spectroscopy for spin dynamics investigations of bulk and surface materials	4 361/ 172 050	3 148/ 124 182	7 213/ 284 553		0/0
	H2020 - ERC	Optoelectronic medicine - nerve cell regulation with light (OPTEL-MED)	0/0	7 794/ 307 439	8 112/ 320 011	6 240/ 246 140	3 766/ 148 568
	H2020 - Future and Emerging Technologies	Plasmon-enhanced Terahertz Electron Paramagnetic Resonance	3 202/ 126 320	2 672/ 105 399	0/0	0/0	0/0
	H2020 - MSCA	GeoDust	1 076/ 42 438	201/ 7 933	1 675/ 66 086	0/0	0/0
	H2020 - MSCA	Water Quality in Drinking Water Distribution Systems	0/0	79/ 3 136	0/0	0/0	0/0
	H2020 - MSCA	A network for dynamic wearable applications with privacy constraints	3 555/ 140 237	4 308/ 169 945	3 995/ 157 577	2 263/ 89 276	0/0
	H2020 - MSCA	Robust End-To-End SPEAKER recognition based on deep learning and attention models	1 841/ 72 616	288/ 11 362	0/0	0/0	0/0
	H2020 - MSCA	Localized catalytic hotspot detection, manipulation, and creation for Energy Innovations (LoCatSpot)	1 203/ 47 459	1 706/ 67 290	820/ 32 358	0/0	0/0
	H2020 - MSCA	Motion Powered 3D Printed Self-Healable Energy Storage for Wearable Electronics utilizing Plastic Waste (MotionEst)	1155/ 45 572	1757/ 69 318	821/ 32 368	0/0	0/0
	H2020 - MSCA	Exchanges for SPEech ReseArch aNd TechnOlogies	0/0	134/ 5 277	849/ 33 486	2243/ 88 462	550/ 21 699
	H2020 - MSCA	Indirect Magnetic Interactions: Tuning by Electric Field (IMAGINE)	0/0	570/ 22 504	2020/ 79 688	1 281/ 50 552	0/0
	H2020 - MSCA	Sustainable Design of 3D-printed Responsive Interfaces for Electrically Monitoring Bistable (Supra)Molecular Switches: Towards 3D-printed Logic Gates	0/0	781/ 30 825	1 359/ 53 612	0/0	0/0
	H2020 - MSCA	Stretchable Transparent Microsupercapacitor from Nanodiamond Decorated Laser-Induced Graphene: Design and Demonstrator	0/0	0/0	1 226/ 48 376	1 734/ 68 400	597/ 23 546

	H2020 - MSCA	Sunlight Active Mesoporous Black TiO ₂ Micro/Nanomotors	0/0	468/ 18 467	1 708/ 67 375	1 737/ 68 508	0/0
	H2020 - Health, demographic change and well-being	Assessing and Enhancing Emotional Competence for Well-Being (ECoWeB) in the Young: A principled, evidence-based, mobile-health approach to prevent mental disorders and promote mental well-being	33/ 1 303	190/ 7 482	35/ 1 382	0/0	0/0
	H2020 - Leadership in enabling and industrial technologies - ICT	SILENSE - (Ultra)Sound Interfaces and Low Energy iNtegrated Sensors	887/ 34 972	0/0	0/0	0/0	0/0
	H2020 - Leadership in enabling and industrial technologies - ICT	Cross-CPP - Ecosystem for Services based on integrated Cross-sectorial Data Streams from multiple Cyber Physical Products and Open Data Sources	3 610/ 142 403	225/ 8 877	0/0	0/0	0/0
	H2020 - Leadership in enabling and industrial technologies - ICT	SAUCE - Smart Asset re-Use in Creative Environments	3 664/ 144 544	0/0	0/0	0/0	0/0
	H2020 - Leadership in enabling and industrial technologies - ICT	TEchnology TRAnsfer via Multinational Application eXperiments	1 883/ 74 279	343/ 13 526	0/0	0/0	0/0
	H2020 - Leadership in enabling and industrial technologies - ICT	Special projects for advanced research and technology in Europe	4 140/ 163 323	2 878/ 113 540	1 283/ 50 622		0/0
	H2020 - Leadership in enabling and industrial technologies - ICT	HumanE AI Network	198/ 7 828	1 135/ 44 765	871/ 34 366	608/ 23 987	78/ 3 078
	H2020 - Leadership in enabling and industrial technologies - ICT	5G enhanced robot autonomy	0/0	2 210/ 87 163	3897/15 3715	7778/30 6815	2183/86 128
	H2020 - Leadership in enabling and industrial technologies – ICT	AUTODRIVE - Advancing fail-aware, fail-safe, and fail-operational electronic components, systems, and architectures for fully automated driving to make future mobility safer, affordable, and end-user acceptable	3 638/ 143 511	0/0	0/0	0/0	0/0
	H2020 - Leadership in enabling and industrial technologies – ICT	I-MECH - Intelligent Motion Control Platform for Smart Mechatronic Systems	1 102/ 43 469	0/0	0/0	0/0	0/0
	H2020 - Leadership in enabling and industrial technologies – ICT	Photoacoustic/Ultrasound Mammoscopy for evaluating screening-detected lesions in the breast	1684/ 66 442	318/ 12 554	0/0	0/0	0/0
	H2020 - Secure, clean and efficient energy	Rotterdam, Umea and Glasgow: generating exemplar districts in sustainable energy deployment	185/ 7 281	158/ 6 217	1231/ 48 547		0/0
	H2020 - Secure, clean and efficient energy	One Network for Europe	48/ 1 902	336/ 13 251	292/ 11 531	219/ 8 632	0/0

	H2020 - Europe In A Changing World - Inclusive, Innovative And Reflective Societies	Multiple Intelligent Conversation Agent Seviles for Reception, Management and Integration of Third Country Nationals	1869/ 73741	1315/ 51855	2079/ 82011	32/ 1256	0/0
	H2020 - Secure societies - Protecting freedom and security of Europe and its citizens	Real time network, text, and speaker analytics for combating organized crime	2203/ 86891	2503/ 98742	1656/65 329	0/0	0/0
	H2020 - Smart, Green And Integrated Transport	Switch and Crossing Optimal Design and Evaluation	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0
	H2020 - Smart, Green And Integrated Transport	Automatic collection and processing of voice data from air-traffic communications	1661/ 65504	1634/ 64459	272/ 10745	0/ 0	0/ 0
	H2020 - Smart, Green And Integrated Transport	HAAWAIL - Highly Automated Air Traffic Controller Workstations with Artificial Intelligence Integration	561/ 22126	3161/ 124697	3842/ 151559	0/ 0	0/ 0
	H2020 - Twinning of research institutions	Strengthening Nanoscience and Nanotechnology Research at CEITEC	2351/ 92754	3540/ 139630	1698/ 66990	0/ 0	0/ 0
	H2020 SPREADING EXCELLENCE AND WIDENING PARTICIPATION	Molecularly Imprinted Photocatalytic light-driven micro/nanomotors for selective degradation and detection of pollutants in water and food	0/ 0	750/ 29591	1806/ 71233	0/ 0	0/ 0
	Horizon Europe - MSCA	Effective fabrication of 2D TMDs with the aid of in-situ microscopy (FAJANS)	0/ 0	0/ 0	0/ 0	610/ 24078	1771/ 69861
	Horizon Europe - MSCA	Diaminodicyanoanthroquinodimethanes: Electrically driven molecular micromotors	0/ 0	0/ 0	415/ 16359	1906/ 75172	1763/ 69530
	Horizon Europe - MSCA	Study of functionalised Pluronic® polymer doping in thermoelectric ionic polymer gels for tuning of ionic Seebeck coefficient and application in harvesting heat to electricity	0/ 0	0/ 0	276/ 10907	1972/ 77800	1864/ 73544
	Horizon Europe - Civil Security for Society	TENACity: Travelling intelligENce Against CrIme and Terrorism	0/ 0	0/ 0	576/ 22737	3478/ 137219	2653/ 104668
	Horizon Europe – Digital, Industry and Space	AI enabled artistic solutions for sustainable food systems	0/ 0	0/ 0	252/ 9958	962/ 37959	1808/ 71303
	Horizon Europe – Digital, Industry and Space	NGIO Entrust Hop On	0/ 0	0/ 0	0/ 0	166/ 6567	3994/ 157573
	Horizon Europe – Digital, Industry and Space	Multilingual and Cross-cultural interactions for context-aware, and bias-controlled dialogue systems for safety-critical applications	0/ 0	0/ 0	0/ 0	0/ 0	5134/ 202527
	Horizon Europe – Digital, Industry and Space	Multimodal Human-Machine Interfaces for Morphing Computerized Mats with Embodied Sensing and Artificial Intelligence	0/ 0	0/ 0	0/ 0	0/ 0	1440/ 56807
	Horizon Europe - EIC	Closed-loop Individualized image-guided Transcranial Ultrasonic Stimulation	0/ 0	0/ 0	146/ 5765	1514/ 59705	2320/ 91535

	Horizon Europe - EIT	Secondary use of EV-batteries for Energy Storage (SEVES)	0/ 0	0/ 0	1134/ 44723		0/ 0
	Horizon Europe – Widening participation and spreading excellence	BAANG - BUILDING ACTIONS IN SMART AVIATION WITH ENVIRONMENTAL GAINS	0/ 0	0/ 0	195/ 7701	4821/ 190194	6956/ 274385
	Horizon Europe – Widening participation and spreading excellence	Ni-rich, Engineered Cu-ZrN@NiCo LDHs Bifunctional Cathode Catalyst for High-Performance Metal-Air Batteries (NEC2-MABs)	0/ 0	0/ 0	0/ 0	716/ 28243	1522/ 60036
	Horizon Europe – Widening participation and spreading excellence	The Development of Hetero structured Nanofibrous Microrobot for Upcycling of Microplastics Integrated with Hydrogen Evolution: From Trash to Treasure (PlastiFuel)	0/ 0	0/ 0	0/ 0	578/ 22816	2112/ 83295
	Horizon Europe – Widening participation and spreading excellence	Tunable Charge Injection Layers for Organic Semiconductors (TILOS)	0/ 0	0/ 0	0/ 0	0/ 0	506/ 19976
	Horizon Europe – Widening participation and spreading excellence	Verification and Analysis for Safety and Security of Applications in Life	0/ 0	0/ 0	0/ 0	0/ 0	1460/ 57596
	Program Interreg	Accessible platform for macro-modeling of radio frequency systems and devices (Amor)	1891/ 74583	1759/ 69396	1751/ 69073	0/ 0	
		Innovative monitoring system for water technologies and microbiological parameters in the aquatic ecosystem	41/ 1604	0/ 0	0/ 0	0/ 0	0/ 0
		Technology for processing waste biomass from the forestry industry for advanced polymer composites	0/ 0	0/ 0	4434/ 174912	0/ 0	0/ 0
		DiSTT - Digital skills transformation toolkit for a resilient labour market	0/ 0	0/ 0	0/ 0	0/ 0	1651/ 65119
		Austrian-Czech union of regenerative medicine for acute and chronic wounds	0/ 0	0/ 0	0/ 0	0/ 0	756/ 29808
EU	JU ECSEL program	MegaModelling at Runtime - scalable model-based framework for continuous development and runtime validation of complex systems	31/ 1210	0/ 0	0/ 0	0/ 0	0/ 0
		MegaModelling at Runtime - scalable model-based framework for continuous development and runtime validation of complex systems	1782/ 70289	0/ 0	0/ 0	0/ 0	0/ 0
		From the cloud to the edge - smart IntegraTion and OPTimisation Technologies for highly efficient Image and Video processing Systems	630/ 24869	1664/ 65658	0/ 0	0/ 0	0/ 0
		Framework of key enabling technologies for safe and autonomous drones' applications	907/ 35779	1532/ 60443	2703/ 106631	15/ 601	0/ 0
		Arrowhead Tools for Engineering of Digitalisation Solutions	934/ 36827	1295/ 51104	1179/ 46494	0/ 0	0/ 0
		Verification and Validation of Automated Systems' Safety and Security	213/ 8420	2043/ 80591	1449/ 57158	2183/ 86124	0/ 0
		AI-augmented automation for efficient DevOps, a model-based framework for continuous	0/ 0	286/ 11299	145/ 5720	1723/ 67985	418/ 16505

		development At RunTime in cyber-physical systems					
		Distributed Artificial Intelligent Systems	0/ 0	141/ 5574	135/ 5339	1801/ 71040	496/ 19556
EU	JU KDT program	High Performance, Safe, Secure, Open-Source Leveraged RISC-V Domain-Specific Ecosystems	0/ 0	0/ 0	0/ 0	336/ 13259	370/ 14593
		Long Life Power Platforms for Internet of Things	0/ 0	0/ 0	0/ 0	351/ 13849	1964/ 77490
	Other foreign programs - except EU (R&D)	Effective Management of Coolant in Cold Rolling (MANCOOL)	0/ 0	243/ 9571	0/ 0	0/ 0	0/ 0
		ICT Networking for Overcoming Technical and Social Barriers in Instrumental Analytical Chemistry Education/ NETCHEM	178/ 7041	0/ 0	0/ 0	0/ 0	0/ 0
		Study of Neutron Flux in Spallation Targets	21/ 847	0/ 0	0/ 0	0/ 0	0/ 0
		Study of Neutron Flux in Spallation Targets	4082/ 161016	6321/ 249368	0/ 0	0/ 0	0/ 0
		Health and activity monitoring by wearables in extreme conditions	1447/ 57074	1437/ 56693	655/ 25847	0/ 0	0/ 0
		Neutron Flux Measurement with Multifoil and Alloy Detectors	57/ 2259	0/ 0	0/ 0	0/ 0	0/ 0
		INTERACTIONS OF DIFFERENT (METHYLATED) HUMIC ACIDS WITH ORGANIC IONIC COMPOUNDS	203/ 7989	5/ 192	0/ 0	71/ 2801	0/ 0
		Light-Weight 600 °C Solid Oxide Fuel Cells for Energy Security (LW-SOFC)	0/ 0	0/ 0	99/ 3909	251/ 9882	448/ 17671
		Advanced Signal Processing Framework for Sensor Networks	0/ 0	0/ 0	0/ 0	546/ 21526	2090/ 82430
		Improving the monitoring of the state of agricultural land affected by military operations	0/ 0	0/ 0	0/ 0	0/ 0	362/ 14297
	Visegrad Fund	Transfer Pricing in V4 Countries	86/ 3379	0/ 0	0/ 0	0/ 0	0/ 0
		Distress prediction models in V4 countries and their audit applicability	0/ 0	0/ 0	0/ 0	0/ 0	22/ 881
Individually Stated Investment Projects Supported by a Foreign Provider							
European Union	Interreg Programme	Accessible platform for macro-modeling of radio frequency systems and devices (Amor)	249/ 9814	0/ 0	0/ 0	0/ 0	0/ 0
Total			68455/ 270040 1	68305/ 269449 0	69911/ 275781 5	48791/ 192469 8	51055/ 201400 4
In the role of another participant							
Provider / Investor	Programme/ Grant Scheme	Project name	Support (in thousands CZK/ EUR)				
			2020	2021	2022	2023	2024
Individually Stated Non-Investment Projects Supported by a Foreign Provider							
	ERASMUS	Cybersecurity Skills Alliance - A New Vision for Europe	0/ 0	2292/ 90427	769/ 30352	985/ 38849	1499/ 59141
		Designing a Joint Masters in Cybersecurity	0/ 0	0/ 0	0/ 0	114/ 4484	0/ 0
		Micro degree for modern harmonized electrical engineering	0/ 0	0/ 0	0/ 0	171/ 6747	1781/ 70271
	H2020 - MSCA	RISEN - Railway Infrastructure System Engineering Network	0,02654 8673	396/ 15616	0/ 0	64/ 2519	0/ 0

	H2020 - Future and Emerging Technologies	Breakthrough zero-emissions heat generation with hydrogen-metal systems (HERMES)	354/ 13963	4996/ 197082	4872/ 192201	4598/ 181369	3196/ 126082
	H2020 - Food security, sustainable agriculture and forestry, marine, maritime and inland water research, and the bioeconomy	Demonstrative process for the production and chemical recycling of environmentally safe, superior bio-based packaging by plasma integration in the value chain.	0/ 0	809/ 31904	2461/ 97098	720/ 28408	2642/ 104207
	H2020 - Leadership in enabling and industrial technologies - Advanced materials	NanoFabNet - International Hub for sustainable industrial-scale Nanofabrication	490/ 19347	2738/ 108004	1963/ 77434	0/ 0	0/ 0
	H2020 - Leadership in enabling and industrial technologies - ICT	300mm Pilot Line for Smart Power and Power Discretes - R3 PowerUP	411/ 16205	664/ 26174	0/ 0	0/ 0	0/ 0
	H2020 - Leadership in enabling and industrial technologies - ICT	Product Security for Cross Domain Reliable Dependable Automated Systems	1621/ 63949	712/ 28106	0/ 0	0/ 0	0/ 0
	H2020 - Leadership in enabling and industrial technologies - ICT	COSMOS - COherent Support for MObility.E Strategy	203/ 8022	253/ 9993	0/ 0	0/ 0	0/ 0
	H2020 - Leadership in enabling and industrial technologies - ICT	AI4DI - Artificial Intelligence for Digitizing Industry	295/ 11621	1440/ 56798	2733/ 107827	0/ 0	0/ 0
	H2020 - Leadership in enabling and industrial technologies - ICT	NewControl - Integrated, Fail-Operational, Cognitive Perception, Planning and Control Systems for Highly Automated Vehicles	0/ 0	1160/ 45766	8537/ 336770	45/ 1781	0/ 0
	H2020 - Leadership in enabling and industrial technologies - ICT	LEVEL-UP - Protocols and Strategies for extending the useful Life of major capital investments and Large Industrial Equipment.	617/ 24330	665/ 26225	1242/ 48992	2173/ 85700	0/ 0
	H2020 - Leadership in enabling and industrial technologies - ICT	ArchitectECA2030 - Trustable architectures with acceptable residual risk for the electric, connected and automated cars	46/ 1809	619/ 24411	432/ 17054	2062/ 81324	0/ 0
	H2020 - Leadership in enabling and industrial technologies - ICT	NextPerception	620/ 24457	2109/ 83215	3112/ 122754	1762/ 69521	0/ 0
	H2020 - Leadership in enabling and industrial technologies - ICT	AI4CSM - Automotive Intelligence for/at Connected Shared Mobility	0/ 0	47/ 1861	0/ 0	5161/ 203592	4956/ 195493
	H2020 - Leadership in enabling and industrial technologies - ICT	IMOCO4.E - Intelligent Motion Control under Industry 4.E	0/ 0	0/ 0	397/ 15656	486/ 19171	586/ 23109

	H2020 - Leadership in enabling and industrial technologies - ICT	Trusted European SiC Value Chain for a greener Economy (TRANSFORM)	0/ 0	646/ 25488	1248/ 49245	1444/ 56965	552/ 21777
	H2020 - Secure, clean and efficient energy	RESHeat - Renewable Energy System for residential building heating and electricity production	4/ 166	79/ 3134	2134/ 84163	4001/ 157815	2079/ 82010
	H2020 - Smart, Green And Integrated Transport	EDEC - Enhanced Diesel Engine Control	76/ 1915	0/ 0	0/ 0	0/ 0	0/ 0
	H2020 - Smart, Green And Integrated Transport	Energy Harvesting for Signalling and Communication Systems - ETALON	224/ 8851	0/ 0	0/ 0	0/ 0	0/ 0
	H2020 - Smart, Green And Integrated Transport	1000kmPLUS - Scalable European Powertrain Technology Platform for Cost-Efficient Electric Vehicles to Connect Europe	1269/ 50079	4794/ 189098	3666/ 144614	52/ 2042	0/ 0
	H2020 - Teaming of excellent research institutions and low performing RDI regions	RICAIP - Research and Innovation Centre on Advanced Industrial Production	5450/ 214986	9992/ 394162	12398/ 489056	14249/ 562109	16161/ 637530
	Horizon Europe - MSCA	REaL-time characterization of ANisotropic Carbon-based tEchnological fibres, films and composites (RELIANCE)	0/ 0	0/ 0	0/ 0	0/ 0	536/ 21127
	Horizon Europe – Research infrastructures	EXCITE ² : Enhanced X(cross)-disciplinary Community-driven Imaging Technologies for Earth and Environmental material research	0/ 0	0/ 0	0/ 0	0/ 0	894/ 35264
	Horizon Europe – Climate, Energy and Mobility	Academics4Rail	0/ 0	0/ 0	0/ 0	57/ 2266	421/ 16600
	Horizon Europe – Climate, Energy and Mobility	H-HOPE - Hidden Hydro Oscillating Power for Europe	0/ 0	0/ 0	53/ 2094	1699/ 67006	2434/ 96013
	Horizon Europe – Digital, Industry and Space	A-IQ Ready - Artificial Intelligence using Quantum measured Information for realtime distributed systems at the edge	0/ 0	0/ 0	0/ 0	448/ 17679	231/ 9114
	Horizon Europe – Digital, Industry and Space	Listen2Future - Acoustic sensor solutions integrated with digital technologies as key enablers for emerging applications fostering Society 5.0	0/ 0	0/ 0	0/ 0	825/ 32554	1635/ 64485
	Horizon Europe – Digital, Industry and Space	ARCHIMEDES - Trusted Lifetime in Operation for a Cyclic Economy	0/ 0	0/ 0	0/ 0	1423/ 56130	0/ 0
	Horizon Europe – EIC	Metaplastic Spintronics Synapses (METASPIN)	0/ 0	0/ 0	0/ 0	1098/ 43299	1192/ 47028
	Horizon Europe – Widening participation and spreading excellence	Glass-ceramic innovation ecosystem for implementation of new research directions in applications (GlaCerHub)	0/ 0	0/ 0	0/ 0	3924/ 154795	6025/ 237687
	Horizon Europe – Widening participation and	Cyber-security Excellence Hub in Estonia and South Moravia	0/ 0	0/ 0	0/ 0	2302/ 90805	4067/ 160428

	spreading excellence						
	Horizon Europe – Widening participation and spreading excellence	Cultivating Leaders for Innovative Coatings and Additive Manufacturing Applications (CLICAM)	0/0	0/0	0/0	0/2	2298/90652
	Horizon Europe	SDR based X-G cyber security for Industry 5.0+	0/0	0/0	0/0	0/0	184/7250
	Visegrad Fund	PhosFriends: How to stay alive in V4? Phosphorus Friends Club builds V4's resilience	0/0	0/0	3/113	34/1329	18/710
	Interreg Program	SEDECO - Sediments, ecosystem services and interrelation with floods and droughts in the AT-CZ border region	1170/46170	800/31562	731/28822	0/0	-31/-1229
		Interoperability of heterogeneous radio systems	1629/64247	41/1634	0/0	0/0	0/0
		Advanced analysis of existing reinforced and prestressed concrete bridges: Aspects of nonlinearity, reliability, safety formats, and service life	1253/49419	1079/42564		0/0	0/0
		Development of an integrated concept for the deployment of innovative technologies and services allowing independent living of frail elderly (niCE-life)	2027/79970	3188/125748	702/27673		0/0
		Strengthening research and development capacity in the Slovak-Czech cross-border region in the field of plasma technologies for medical applications	1849/72924	1563/61652		0/0	0/0
		Innovative monitoring and analysis of traffic on the cross-border road network	768/30309	12/468	0/0	0/0	0/0
		Improvement of technical and capacity parameters of the railway connection between the South Moravian and Lower Austrian regions (TRANSREGIO)	240/9458	104/4095		0/0	0/0
		Strengthening cross-border educational potential in the fields of innovative manufacturing technologies and characterization of glass and ceramic materials	369/14544	503/19823		0/0	0/0
		Promotion and enhancement of the attractiveness of natural science and technical fields specialized for practical needs in cross-border areas	84/3298	754/29740	377/14860	0/0	54/2138
		ReMaP - Research on magnesium alloys for additive manufacturing of structural and biomedical components	1003/39582	1290/50899	2969/117105		
		Innovative monitoring system for water technologies and microbiological parameters in the aquatic ecosystem	0/0	2259/89118	3309/130545	0/0	
		ROTCUT - From Linear to Rotary Cutting of Hardwood	0/0	29/1154	858/33849	0/0	
		Integrated research center for structural analysis (IREC)	0/0	0/0	50/1972	0/0	0/0
		Environmentally efficient construction as a tool for mitigating climate change in the cross-border region	0/0	0/0	0/0	0/0	249/9817

		Green strategies for modern cities	0/ 0	0/ 0	0/ 0	0/ 0	223/ 8785
		Danube water balance	0/ 0	0/ 0	0/ 0	0/ 0	890/ 35111
		Integrated research center for structural analysis (IREC)	0/ 0	0/ 0	0/ 0	0/ 0	311/ 12271
		PHOS4PLANT - From waste to resource - Recycling of sewage sludge ash into phosphate-rich plant fertilizer	0/ 0	0/ 0	0/ 0	0/ 0	1390/ 54813
EU	JU KDT Program	R-PODID - Reliable Powerdown for Industrial Drives	0/ 0	0/ 0	0/ 0	306/ 12068	878/ 34642
		ALL2GaN - Affordable smart GaN IC solutions as enabler of greener applications	0/ 0	0/ 0	0/ 0	485/ 19138	937/ 36975
		Cynergy4MIE - Leverage synergy by cyber-physical systems for the convergence of the eco systems mobility, infrastructure and energy in the circular economy for the Society 5.0	0/ 0	0/ 0	0/ 0	0/ 0	156/ 6161
		Distributed Multi-Sensor System For Human Safety and Health (DistriMuSe)	0/ 0	0/ 0	0/ 0	0/ 0	526/ 20745
	Other foreign programs - EU (R&D)	EDIH-DIGIMAT: Flexible Manufacturing Systems Using Artificial Intelligence	0/ 0	0/ 0	0/ 0	325/ 12836	1645/ 64875
		COMET K2 Center for Symbiotic Mechatronics	0/ 0	0/ 0	0/ 0	69/ 2731	-69/ -2731
		Cybersecurity Innovation Hub	0/ 0	0/ 0	0/ 0	342/ 13496	2968/ 117062
		AI-MATTERS - AI MANufacturing Testing and experimenTation network For EuROpean industrieS	0/ 0	0/ 0	0/ 0	112/ 4402	422/ 16645
		Digital4Security	0/ 0	0/ 0	0/ 0	143/ 5623	1941/ 76566
		Advancing Robust and Creative Human language technologies through CHallenge Events and Research	0/ 0	0/ 0	0/ 0	0/ 0	300/ 11842
	Other foreign programs - except EU (R&D)	Výskum získavania aktívnych substancií a ich vhodného technologického spracovania z biologického odpadu vaječných blán BIOEKOMEM	1956/ 77169	1305/ 51466	0/ 0	0/ 0	0/ 0
		E-mobility	95/ 3750	0/ 0	0/ 0	0/ 0	0/ 0
		ReduHeatLoss - Reduction of heat losses in hot rolling	523/ 20617	1650/ 65081	1653/ 65223	183/ 7213	319/ 12600
		SmartCool - Smart controlled actuator to homogenize the temperature at the transfer bar	0/ 0	0/ 0	383/ 15090	665/ 26214	1214/ 47900
			0/ 0	123/ 4872	110/ 4323	102/ 4004	0/ 0
Individually Stated Investment Projects Supported by a Foreign Provider							
European Union	Interreg Programme	Promotion and enhancement of the attractiveness of natural science and technical fields specialized for practical needs in cross-border areas	0/ 0	213/ 8413	0/ 0	0/ 0	
		ReMaP- Central Library - investment	2938/ 115883	0/ 0		0/ 0	0/ 0
European Union	Horizon Europe	H-HOPE: Hidden Hydro Oscillating Power for Europe	0/ 0	0/ 0	0/ 0	0/ 0	133/ 5236

European Union	Digital Europe Programme	AI-MATTERS - AI Manufacturing Testing and experimenTation network For EuRopean industries	0/0	0/0	0/0	0/0	4125/162722
	NextGenerationEU	EDIH-DIGIMAT: Flexible Manufacturing Systems Using Artificial Intelligence	0/0	0/0	0/0	0/0	6070/239448
Total			27508/1085125	49325/1945755	57161/2254885	52626/2075987	78137/3082330

Note: For co-sponsorship projects, please only indicate the amount of funding for the evaluated HEI.

4.10.4 Projects supported by the Czech provider

In the role of beneficiary							
Provider / Investor	Programme/ Grant Scheme	Project name	Support (in thousands CZK/ EUR)				
			2020	2021	2022	2023	2024
Individually Stated Non-Investment Projects Financed from EU Structural Funds							
	Operational Programme Johannes Amos Comenius	IMPROVE V	0/0	0/0	0/0	6 781 / 267 500	7094/279833
		MEBioSys - Mechanical engineering of biological and bio-inspired systems	0/0	0/0	0/0	6126/241668	31719 / 1251239
		IMPROVE VI	0/0	0/0	0/0	2077/81913	3461/136529
	Operational Programme Research, Development and Education	BUT Opportunity	8118/320228	1693/66798	0/0	0/0	0/0
		CVVOZE Power Laboratories - modernization of research infrastructure	0/0	0/0	0/0	0/0	0/0
		CEITEC Nano+	3556/140279	908/35806	0/0	0/0	0/0
		Development of infrastructure for interdisciplinary research of technologies in biomedicine and bioinformatics	1454/57360	773/30507	0/0	0/0	0/0
		Modern and open study of technology	0/0	0/0	0/0	0/0	0/0
		Development of interdisciplinary doctoral study program Biomedical Technology and Bioinformatics	821/32392	2084/82199	510/20107	124/4902	
		Architected materials designed for additive manufacturing	6656/262548	8220/324248	6474/255402	0/0	0/0
		Sustainable Process Integration Laboratory (SPIL)	15950 / 629191	16935 / 668038	7372/290817	0/0	0/0
		International mobility of researchers at the Brno University of Technology	5600/220893	9827/387643	5063/199705		0/0

		Strategic Partnership for Environmental Technologies and Energy Production	11229 / 44294 1	10322 / 40716 2	5983/ 23601 1	0/ 0	0/ 0
		Computer Simulations for Effective Low-Emission Energy Engineering	11059 / 43624 8	12308 / 48552 7	11868 / 46817 8	71/ 2817	0/ 0
		International mobility of MSCA researchers at BUT in Brno	3154/ 12441 0	0/ 0	0/ 0	0/ 0	0/ 0
		Machine Tools and Precision Engineering	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0
		International mobility of MSCA researchers at BUT in Brno II	1025/ 40426	31/ 1212	0/ 0	0/ 0	0/ 0
		International mobility of MSCA researchers at BUT in Brno III	4412/ 17403 9	4468/ 17623 4	452/ 17848	0/ 0	0/ 0
		International mobility of researchers at the Brno University of Technology II	1108/ 43708	12914 / 50942 6	33475 / 13205 06	16526 / 65192 1	0/ 0
		International mobility of MSCA researchers at BUT in Brno IV	489/ 19296	6679/ 26348 1	6881/ 27143 5	754/ 29732	0/ 0
Individually Stated Investment Projects Financed from EU Structural Funds							
European Union	Operational Programme Johannes Amos Comenius	MEBioSys - Mechanical engineering of biological and bio-inspired systems	0/ 0	0/ 0	0/ 0	226/ 8932	13951 / 55035 1
		CzechNanoLab+	0/ 0	0/ 0	0/ 0	0/ 0	3099/ 12225 6
	Research and Development for Innovations Operational Programme	Purkyňova 118 Building (502)	0/ 0	0/ 0	0/ 0	0/ 0	4061/ 16020 1
	Operational Programme Research, Development and Education	CEITEC Nano+	7974/ 31453 8	310/ 12231	0/ 0	0/ 0	0/ 0
		Development of infrastructure for interdisciplinary research of technologies in biomedicine and bioinformatics	10061 / 39687 7	3474/ 13704 8	0/ 0	0/ 0	0/ 0
		Architected materials designed for additive manufacturing	0/ 0	17/ 688	74/ 2915	0/ 0	0/ 0
		Sustainable Process Integration Laboratory (SPIL)	746/ 29441	626/ 24681	137/ 5415	0/ 0	0/ 0
		Computer Simulations for Effective Low-Emission Energy Engineering	125/ 4937	0/ 0	15/ 598	0/ 0	0/ 0
Aggregated Non-Investment Projects Funding by Provider (other than stated above)							
Ministry of Education,	Cooperation Programme Czech		153/ 6043	0/ 0	0/ 0	0/ 0	0/ 0

Youth and Sports	Republic - Free State of Bavaria in R&D (8E)						
Ministry of Education, Youth and Sports	Institutional Support		49274 3/ 19437 602	50355 2/ 19864 002	56001 9/ 22091 476	54001 9/ 21302 522	57565 3/ 22708 202
Ministry of Education, Youth and Sports	Institutional Support for co-financing of international projects	-	29507 / 11639 67	34270 / 13518 90	30025 / 11844 36	29156 / 11501 54	39644 / 15638 63
Ministry of Education, Youth and Sports	COST programme		6836/ 26966 6	4412/ 17404 3	2885/ 11380 7	676/ 26667	0/ 0
Ministry of Education, Youth and Sports	ERC-CZ programme		12300 / 48519 6	15836 / 62468 3	11141 / 43947 6	7117/ 28073 8	7117/ 28073 8
Czech Science Foundation (GACR)	Czech Science Foundation (GACR) Programmes		13451 4/ 53062 86	13971 3/ 55113 43	14497 9/ 57190 95	15577 1/ 61448 16	15214 9/ 60019 33
Ministry of Culture CR	Programmes of Ministry of Culture CR		11585 / 45699 4	7255/ 28618 7	4418/ 17429 1	7136/ 28148 8	8308/ 32772 7
Ministry of Regional Development CR	Programmes of Ministry of Regional Development CR		473/ 18663	1030/ 40644	829/ 32692	0/ 0	316/ 12453
Ministry of Industry and Trade CR	Programme of Ministry of Industry and Trade CR		0/ 0	996/ 39305	1016/ 40098	0/ 0	0/ 0
Ministry of Interior CR	Programmes of Ministry of Interior CR		47317 / 18665 62	63043 / 24868 85	69079 / 27249 97	76834 / 30309 08	87495 / 34514 70
Ministry of Health CR	Programmes of Ministry of Health CR		0/ 0	0/ 0	0/ 0	0/ 0	975/ 38462
Ministry of Agriculture CR	Programmes of Ministry of Agriculture CR		0/ 0	800/ 31558	800/ 31558	800/ 31558	800/ 31558
Ministry of Foreign Affairs CR	Programmes of Ministry of Foreign Affairs CR		0/ 0	0/ 0	1391/ 54854	1483/ 58505	1488/ 58704
Technology Agency of CR Programmes	Technology Agency of CR Programmes		15673 8/ 61829 61	10434 9/ 41163 49	93984 / 37074 69	10371 9/ 40914 97	10292 5/ 40601 44
Ministry of Education, Youth and Sports	Mobility Programme of Ministry of		112/ 4411	454/ 17893	416/ 16391	279/ 11018	1588/ 62658

	Education, Youth and Sports						
Ministry of Education, Youth and Sports	Specific University Research		88008 / 34717 29	89997 / 35501 90	88926 / 35079 12	87938 / 34689 54	76555 / 30199 20
Ministry of Education, Youth and Sports	Large Research Infrastructures		55995 / 22088 76	54029 / 21313 21	55557 / 21915 98	61950 / 24437 87	66148 / 26093 89
Ministry of Education, Youth and Sports	INTER EXCELLENCE Programme		31966 / 12610 02	32781 / 12931 51	25067 / 98884 0	2659/ 10488 0	9601/ 37873 9
Summary list for providers – investments							
Ministry of Education, Youth and Sports	ERC-CZ		3200/ 12622 8	0/ 0	0/ 0	0/ 0	0/ 0
Czech Science Foundation (GACR)	Czech Science Foundation (GACR) Programmes		1415/ 55828	7538/ 29734 0	19/ 765	63/ 2487	1112/ 43876
Ministry of Regional Development CR	Programmes of Ministry of Regional Development CR		7/ 265	0/ 0	152/ 6009	0/ 0	11/ 423
Ministry of Interior CR	Programmes of Ministry of Interior CR		1636/ 64521	11150 / 43984 2	625/ 24672	0/ 0	0/ 0
Ministry of Culture CR	Programmes of Ministry of Culture CR		0/ 0	0/ 0	0/ 0	0/ 0	650/ 25641
Ministry of Industry and Trade CR	Programme of Ministry of Industry and Trade CR		0/ 0	0/ 0	0/ 0	0/ 0	4125/ 16272 2
Individually Stated Non-Investment Projects Financed from Regional Sources							
Regional	Grants from the City of Brno	Junior Research Group Leaders (JRGL)	0/ 0	2012/ 79366	3078/ 12141 3	5030/ 19842 9	1575/ 62138
			0/ 0	0/ 0	0/ 0	45/ 1775	0/ 0
	SoMoPro Programme	Transparent Alumina for Energy Saving Light Sources	581/ 22924	0/ 0	0/ 0	0/ 0	0/ 0
		Sequence summarizing neural networks for speaker recognition	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0
		Ultrafast dynamics and control of functional metamagnetic mesoscale devices	0/ 0	77/ 3018	0/ 0	0/ 0	0/ 0

		Biocompatible and biodegradable 3D scaffolds originated from coffee and winery waste	718/ 28340	0/ 0	0/ 0	0/ 0	0/ 0
Total			11693 40/ 46127 817	11649 31/ 45953 879	11736 01/ 46295 884	11134 38/ 43922 620	12016 20/ 47401 168
In the role of another participant							
Provider / Investor	Programme/ Grant Scheme	Project name	Support (in thousands CZK/ EUR)				
			2020	2021	2022	2023	2024
Individually Stated Non-Investment Projects Financed from EU Structural Funds							
	National Recovery Plan	National institute for Neurological Research	0/ 0	0/ 0	1119/ 44142	2148/ 84749	2390/ 94278
	Operational Programme Johannes Amos Comenius	Quantum materials for applications in sustainable technologies	0/ 0	0/ 0	0/ 0	743/ 29299	5701/ 22489 7
		Technology Beyond Nanoscale - TECHSCALE	0/ 0	0/ 0	0/ 0	1477/ 58274	17847 / 70403 6
		Excellence Research in Regenerative Medicine (ExRegMed)	0/ 0	0/ 0	0/ 0	641/ 25291	2976/ 11740 7
	Operational Programme Enterprise and Innovation for Competitiveness		0/ 0	1374/ 54201	2064/ 81432	0/ 0	0/ 0
		Implementation of functional safety elements in the field of manufacturing machines, systems, and robotics	697/ 27503	1328/ 52371	1821/ 71845	366/ 14435	0/ 0
		PROGRESSIVE HIGH-PRESSURE HYDRAULIC SYSTEMS FOR HEAVY INDUSTRY	174/ 6859	0/ 0	0/ 0	0/ 0	0/ 0
		RSE Project s.r.o. - Intelligent system for efficient management and equipment of road infrastructure	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0
		Lighting systems with defined characteristics for industrial vision systems and efficient lighting systems	571/ 22510	0/ 0	0/ 0	0/ 0	0/ 0
		New products to petrol stations in accordance with the development of alternative technology (CNG, LNG, electromobility)	782/ 30846	0/ 0		0/ 0	0/ 0
		Development of 3D printed transtibial prosthesis		0/ 0	0/ 0	0/ 0	0/ 0
		Cross - tool for efficient energy use for sewage sludge drying	210/ 8272		0/ 0	0/ 0	0/ 0
		Application of programs and correlations for calculating boiling crisis in nuclear reactors	973/ 38371	0/ 7	0/ 0	0/ 0	0/ 0
		Development of modern methods to authenticity assessment of "Czech beer"	462/ 18212	0/ 0	0/ 0	0/ 0	0/ 0
		Cooperation in the development of a small watercraft combustion propulsion system with emphasis on minimizing propulsion emissions	878/ 34637		0/ 0	0/ 0	0/ 0
		Application of research results of assembly platforms in direct cooperation with SMEs	1781/ 70273	2983/ 11765 9		0/ 0	0/ 0

		Development of a device for remote data transmission and processing in the field of water, heat, and energy flow measurement using the LPWAN network	189/ 7442	0/ 0	0/ 0	0/ 0	0/ 0
		Development and innovation of vacuum drain elements of flat roof drainage	799/ 31501	0/ 0	0/ 0	0/ 0	0/ 0
		Development of progressive segment elements for playgrounds	264/ 10407	290/ 11452		0/ 0	0/ 0
		Research and development of a modular electric vehicle charging system	2230/ 87987	2602/ 10265 1		0/ 0	0/ 0
		Developement of modular security system RAINBOW	316/ 12453	316/ 12453	364/ 14357		0/ 0
		DEK BIM FUTURE BUILDING	1377/ 54320	2329/ 91866	2967/ 11705 3		0/ 0
		DEVELOPMENT OF FUEL INJECTION SYSTEM WITH MECHANICAL IN-LINE PUMP AND ELECTRONIC REGULATION FOR DIESEL ENGINES FULFILLING NEW EMISSION REGULATIONS	1003/ 39560		0/ 0	0/ 0	0/ 0
		KORES - research and development of new and eco friendly materials and products for office use	838/ 33073	1237/ 48794		0/ 0	0/ 0
		Fascia lubrication and regeneration by hyaluronan	385/ 15168	875/ 34510	799/ 31528	75/ 2968	0/ 0
		Digital transformation of corporate processes and the INVYSYS educational system	0/ 0	826/ 32575	1339/ 52805	5/ 203	0/ 0
		Research and development of a new generation of rainwater drains	235/ 9263	557/ 21968	235/ 9264	24/ 950	0/ 0
		Optimization of vehicle cooling	148/ 5847	482/ 18996	556/ 21920		0/ 0
		Development of a new RFID label converter using collaborative robots in PROFIPRINT spol. s r.o.	76/ 2985	266/ 10477	427/ 16844	1006/ 39679	0/ 0
		Research and development of abrasive geometry modification for advanced grinding	1143/ 45106	2175/ 85804	1943/ 76633		0/ 0
		New generation of sloping staircase with curved track	0/ 0	1314/ 51841	1983/ 78239	605/ 23884	0/ 0
		Implementation of industrial experiment methodology into the product life cycle of STOS	528/ 20823	482/ 19007		0/ 0	0/ 0
		Advanced tracing software for various types of trucks	459/ 18122	1562/ 61605	1581/ 62384		0/ 0
		Development of liquid heating equipment	281/ 11093	427/ 16829		0/ 0	0/ 0
		A new generation of fire platforms in direct cooperation with SMEs	44/ 1733	936/ 36934	5066/ 19984 2		
		Research and development of electric assist scooters with reflection assistance and innovative platform for microbility	275/ 10858	1544/ 60912	762/ 30062		0/ 0
		Design and structural analysis of a carbon frame for an electric motorcycle	0/ 0	666/ 26271	1238/ 48845	582/ 22957	
		Cooperation on R&D of an innovative type of vehicle SIGMA MOTOR s.r.o.	0/ 0	419/ 16515	976/ 38494	539/ 21268	0/ 0
		Technology for measuring the driving parameters of a single-track vehicle for electric motorcycle development	0/ 0	669/ 26384	1603/ 63245	850/ 33514	
		Research and development of an innovative manufacturing technology for shading systems	0/ 0	1031/ 40661	1400/ 55227	1018/ 40168	0/ 0

		Research and development of an automated device for handling and storing spatial moldings	314/ 12374	1075/ 42390	801/ 31609		0/ 0
		Research and development of highly durable hybrid laminates.	0/ 0	675/ 26610	1808/ 71335	765/ 30182	0/ 0
		ADWATEC: Advanced technology for the production of construction boards from municipal waste	0/ 0	1459/ 57557	3677/ 14505 6	3363/ 13266 9	0/ 0
		MAWIS Geodata Management	0/ 0	99/ 3921	758/ 29900	1125/ 44396	
		Multi-protocol integrating master system with advanced monitoring of production	0/ 0	500/ 19727	1785/ 70403	1113/ 43920	0/ 0
		Development of cryogenic turboexpander with generator	0/ 0	504/ 19884	759/ 29934	436/ 17186	0/ 0
		Research and development of light bio-hybrid on-road quad VM45	0/ 0	190/ 7495	544/ 21454	173/ 6806	0/ 0
		SERDYN - Research and development of a new dynamic servo cylinder for energetics	0/ 0	727/ 28674	1712/ 67540	159/ 6258	
		Development of modern control systems for aircraft engines	0/ 0	1364/ 53794	1961/ 77357	647/ 25535	0/ 0
		Development of specific production technology of polymer heat exchanger	0/ 0	980/ 38641	2573/ 10148 2	2088/ 82348	0/ 0
		Sludge sanitation for smaller sources of pollution	0/ 0	252/ 9932	627/ 24742	360/ 14202	0/ 0
		Research and development of a multi-purpose vehicle platform with four electric motors and a control system	0/ 0	913/ 35998	2022/ 79765	1105/ 43607	
		MarS: The most powerful parachute set (weight-volume-power)	0/ 0	86/ 3395	690/ 27210	590/ 23265	
		Printed sensor systems for quality control of sensitive products	0/ 0	655/ 25855	765/ 30167	534/ 21080	
		Development of battery semi-automatic staple-less strapper BO-7E and assembly line	0/ 0	114/ 4480	573/ 22606	167/ 6579	0/ 0
		Research and development of technology for manufacturing vacuum components using unconventional methods	0/ 0	187/ 7359	1340/ 52854	434/ 17128	
		Platform for controlling autonomous robots in logistics applications using AI and 5G networks	0/ 0	0/ 0	2411/ 95126	874/ 34472	0/ 0
		Escalator energy recovery as part of modernization, efficiently utilizing SIL safety elements	0/ 0	367/ 14477	939/ 37031	658/ 25958	
		Digital communication platform for aerospace applications	0/ 0	799/ 31532	1403/ 55326	516/ 20359	0/ 0
		Rapid detector of radiation-induced genetic damage	0/ 0	498/ 19641	959/ 37849	666/ 26290	0/ 0
		Membrane distillation for heavily polluted and aggressive environments	0/ 0	725/ 28606	1282/ 50555	878/ 34617	0/ 0
		Lineární hydraulické aktuátory pro náročné aplikace	0/ 0	740/ 29177	2481/ 97885	2842/ 11210 1	
		Combined on-board unit for airless lubrication of the rail head	0/ 0	889/ 35065	1604/ 63271	1146/ 45215	
		Development of additive and small series technologies for vehicle models production	0/ 0	364/ 14340	600/ 23655	767/ 30273	
		Reusable smart incontinence underwear (INCOTEX)	0/ 0	142/ 5612	1655/ 65302	404/ 15952	0/ 0

		Modern high-wing aircraft in the weight category up to 600 kg	0/ 0	0/ 0	1435/ 56594	1133/ 44693	0/ 0
		Development of Multifunctional IP ISR Pod in AIR TEAM, s.r.o.	0/ 0	0/ 0	2247/ 88630	1062/ 41903	
		Tractor of Lower Middle Power Class With Increased Operator Comfort	0/ 0	0/ 0	3723/ 14688 0	1742/ 68702	
		An optimization and regeneration of ceramic flue-gas filters	0/ 0	0/ 0	1008/ 39746	465/ 18325	0/ 0
		Increasing the shear and flexural strength of composite profiles by using 3D elements for guiding and shaping the mats	0/ 0	178/ 7021	316/ 12455	629/ 24806	0/ 0
		RESEARCH AND DEVELOPMENT OF COMPLEX TECHNOLOGY OF PRODUCTION OF STABLE CHARGE SEMI-FINISHED PRODUCTS	0/ 0	0/ 0	4562/ 17996 0	4097/ 16161 5	0/ 0
		Development of biocompatible polymer dental polish with nano silver incorporated into sodium fluoride	0/ 0	0/ 0	361/ 14234	1058/ 41727	
		Development of a multi-phase fail-safe drive for aerospace applications	0/ 0	0/ 0	1002/ 39514	810/ 31951	0/ 0
		Soil analysis and evaluation system	0/ 0	0/ 0	1035/ 40820	1511/ 59607	0/ 0
		Research and development of advanced Energy Management System based on artificial intelligence for smart use of dynamic electricity tariff for higher penetration of renewable energy sources	0/ 0	0/ 0	2893/ 11414 2	454/ 17924	
		Development of components for the space industry using additive technologies	0/ 0	0/ 0	1857/ 73236	993/ 39179	
		Super-resolution drone photography for scalable precision agriculture using artificial intelligence	0/ 0	0/ 0	1009/ 39815	915/ 36099	342/ 13484
		Development of new test benches for measuring water and heat flow	0/ 0	65/ 2560	826/ 32576	350/ 13818	0/ 0
		Research and development of hygienic aids with pH-based orientation detection to identify the risk of urogenital infections	0/ 0	0/ 0	224/ 8832	280/ 11045	0/ 0
			36/ 1433	305/ 12037	748/ 29518		0/ 0
		Cooperative HD mapping to support the development of autonomous mobility	0/ 0	319/ 12601	1370/ 54024	429/ 16929	
	Operational Programme Technology and Applications for Competitiveness	New generation of inclined stair platforms	0/ 0	0/ 0	0/ 0	614/ 24226	2352/ 92765
		Innovative surface treatments showing reduced risks of infection transmission	0/ 0	0/ 0	0/ 0	269/ 10621	792/ 31237
		Nanofiber membranes for highly efficient air filtration at high temperatures	0/ 0	0/ 0	0/ 0	75/ 2975	635/ 25043
		Integration of autonomous cars into passive safety testing using the digital-twin model	0/ 0	0/ 0	0/ 0	74/ 2929	0/ 0
	Operational Programme Research, Development and Education	Robotics for Industry 4.0	2465/ 97221	2299/ 90676	2517/ 99308	1521/ 59982	0/ 0

		Modernization and support of research activities in the national infrastructure for biological and medical imaging Czech-Biolmaging	225/ 8871	0/ 0	0/ 0	0/ 0	0/ 0
		Research center for low-carbon energy technologies	6784/ 26761 9	6372/ 25134 9	6161/ 24302 9	2426/ 95680	
		Center for advanced aviation technologies	4517/ 17818 9	6623/ 26127 4	5251/ 20715 3	59/ 2347	0/ 0
		Engineering manufacturing technology and precision engineering	2366/ 93339	3227/ 12728 4	3084/ 12166 4	0/ 0	0/ 0
		RICAIP - Research and Innovation Center for Advanced Industrial Production	2772/ 10935 7	5725/ 22583 9	1735/ 68442	511/ 20141	9/ 373
		Modernization of the national infrastructure for biological and medical imaging Czech-Biolmaging	0/ 0	23/ 900	205/ 8099	0/ 0	0/ 0
Individually Stated Investment Projects Financed from EU Structural Funds							
European Union	Operational Programme Johannes Amos Comenius	Quantum materials for applications in sustainable technologies	0/ 0	0/ 0	0/ 0	0/ 0	5431/ 21422 5
		Excellence Research in Regenerative Medicine (ExRegMed)	0/ 0	0/ 0	0/ 0	0/ 0	1035/ 40811
		Energy conversion and storage_Eco&Stor	0/ 0	0/ 0	0/ 0	0/ 0	15173 / 59852 5
		Technology Beyond Nanoscale - TECHSCALE	0/ 0	0/ 0	0/ 0	0/ 0	6667/ 26300 2
	Operational Programme Research, Development and Education	Robotics for Industry 4.0		0/ 0	0/ 0	0/ 0	0/ 0
		Research centre for low-carbon energy technologies	2092/ 82519	1602/ 63204	1269/ 50060	0/ 0	0/ 0
		Research and Innovation Centre on Advanced Industrial Production	62178 / 24527 64	12041 2/ 47499 71	52657 / 20771 89	65318 / 25766 50	
		Modernization of the National Infrastructure for Biological and Medical Imaging Czech-Biolmaging	0/ 0	2281/ 89986	0/ 0	0/ 0	0/ 0
Aggregated Non-Investment Project Funding by Provider (other than stated above)							
Ministry of Education, Youth and Sports	National Sustainability Programme II		97268 / 38370 13	0/ 0	0/ 0	0/ 0	0/ 0
Ministry of Education, Youth and Sports	COST programme		592/ 23353	431/ 17002		132/ 5197	112/ 4411
Ministry of Education,	EUREKA programme		1963/ 77436	0/ 0	0/ 0	0/ 0	0/ 0

Youth and Sports							
Czech Academy of Sciences	Programmes of Czech Academy of Sciences		0/ 0	0/ 0	0/ 0	177/ 6968	224/ 8839
Czech Science Foundation (GACR)	Czech Science Foundation (GACR) Programmes		11598 / 45752 9	13986 / 55173 2	17633 / 69558 9	22530 / 88875 9	21512 / 84859 3
Ministry of Culture CR	Programmes of Ministry of Culture CR		0/ 0	0/ 0	0/ 0	4514/ 17806 1	5425/ 21401 2
Ministry of Industry and Trade CR	Programme of Ministry of Industry and Trade CR		11201 0/ 44185 48	77394 / 30530 08	34307 / 13533 15	2106/ 83064	
Ministry of Interior CR	Programmes of Ministry of Interior CR		22146 / 87359 9	28876 / 11390 96	41227 / 16263 04	38091 / 15026 03	39647 / 15639 97
Ministry of Health CR	Programmes of Ministry of Health CR		8733/ 34450 7	8962/ 35353 1	6628/ 26144 7	6490/ 25601 6	4027/ 15885 6
Ministry of Agriculture CR	Programmes of Ministry of Agriculture CR		1927/ 76016	1860/ 73373	2578/ 10170 6	1307/ 51543	2374/ 93653
Technology Agency of CR Programmes	Technology Agency of CR Programmes		27568 3/ 10875 067	28771 3/ 11349 621	26990 7/ 10647 236	30925 8/ 12199 522	27698 9/ 10926 575
Ministry of Education, Youth and Sports	Mobility Programme of Ministry of Education, Youth and Sports		0/ 0	0/ 0	9/ 355	9/ 355	0/ 0
Ministry of Education, Youth and Sports	Large Research Infrastructures		1348/ 53183	817/ 32217	985/ 38875	1408/ 55538	1480/ 58371
Ministry of Education, Youth and Sports	INTER EXCELLENCE Programme		1779/ 70178	823/ 32465	587/ 23139	1213/ 47850	1193/ 47071
Total			63591 9/ 25085 576	60901 8/ 24024 366	53533 5/ 21117 768	50592 0/ 19957 392	41427 0/ 16341 995

Note: Please summary list GA CR, TA CR and other departmental projects. For co-sponsor projects, please indicate the financial volumes for the HEI. Projects financed from EU structural funds and focused exclusively on R&D&I (e.g. OP JAK, OP TAK, NPO) and projects financed from regional sources focused exclusively on R&D&I list individually. For co-sponsoring projects, please indicate the financial volumes for the evaluated HEI only.

4.10.5 Projects supported from non-public sources

In the role of beneficiary

Provider Investor	Project name	Support (in thousands CZK/ EUR)				
		2020	2021	2022	2023	2024
ŠKODA AUTO, a.s.	Donations	1175/ 46346	1003/ 39572	375/ 14793	0/ 0	917/ 36168
Altech	Donations	0/ 0	0/ 0	220/ 8681	73/ 2883	132/ 5220
E.ON ČR	Donations	400/ 15779	450/ 17751	0/ 0	0/ 0	800/ 31558
Garrett Motion CR s.r.o.	Donations	0/ 0	0/ 0	100/ 3945	0/ 0	0/ 0
Slovácké strojírný	Donations	140/ 5531	107/ 4227	767/ 30254	0/ 0	0/ 0
Total						
In the role of another participant						
Provider Investor	Project name	Support (in thousands CZK/ EUR)				
		2020	2021	2022	2023	2024
Total						

Note: Indicate, for example, sponsorship donations, resources generated from other own economic activities, foreign subsidy programmes of private entities.

4.11 Rules for the use of institutional support for the LCDRO

The HEI will describe the strategy and rules for the use of institutional support for the LCDRO in the management of institutionally supported research activities (e.g., prioritisation of research topics by the HEI according to individual needs, internal grant agencies, incentive tools, support for excellent science) and the method for distribution of institutional support to individual departments/

research teams for the period of 2020–2024. The impact on the management of institutionally supported research activities will be described by the HEI using specific examples (e.g. distribution of institutional support in the period of 2020–2024 depending on the evaluation results, examples of supported excellent science projects, etc.).

Maximum 500 words plus 200 words for each example given (max. five examples).

Self-assessment:

Like other Czech universities, BUT uses three primary funding sources for research:

- Normative** (formula/criteria based) funding: **institutional support for the LCDRO** (long-term conceptual development of a research organizations) provided by the Ministry of Education, Youth and Sports. The amount allocated reflects the University's performance in the national evaluation framework (previously Methodology 17+, now HEI 2025+). In 2024, this amounted to 579.6 mil. CZK / 22 862 945 EUR, i.e., 10.3% of the total research funding.
- Competitive grant funding (project-based)** acquired through competitive grant calls from national and international providers (for details see section 4.5). In 2024, this amounted to 1 757 mil. CZK / 69 310 716 EUR, i.e., 31% of the total research funding.
- Commercial contract-based funding** based on research contracts closed with the commercial partners, but also public institutions. In 2024, this was 172.1 mil. CZK/ 6 790 457 EUR, i.e. 3 % of total research funding

Institutional support is distributed among BUT faculties and university institutes in accordance with the **Internal Budget Allocation Rules** (available in Czech only). These rules are proposed by the Rector and prepared by the Vice-Rector for Research, and approved by the BUT Academic Senate, an elected autonomous representative body composed of academic staff and student representatives. Each faculty then allocates its share further to departments based on their own internal rules.

In 2024, the new university management undertook a **major revision of the rules for distributing institutional support**, with the aim of more significantly **reflecting the quality and scope of research at individual faculties and eliminating outdated retrospective parameters**. Until 2023, most of the institutional funding was allocated through a "stabilisation component" based on historical performance prior to the implementation of Methodology 2017+.

The new allocation model is based on the following principles:

- **Formative and forward-looking approach:** Rules are designed to guide long-term development rather than focus solely on retrospective assessment.
- **Motivation and predictability:** The system aims to be predictable and motivating, reducing the risk of researcher demotivation and promoting initiative.

The new rules reflect three main aspects:

- **Development aspect:** Support for promising fields based on their quality and capacity. The development component replaces the previous stabilisation component and is calculated based on the number and qualification structure of R&D staff and the research focus of the faculty.
- **Quality aspect:** Includes performance indicators such as M1 Module results, citation impact, internationalisation, number of doctoral students, and revenues from knowledge transfer.
- **Performance aspect:** Based on the number and quality of publications (including first or corresponding authorship), volume of targeted funding and contract research.

Additionally, **3% of the total institutional support** is allocated to the **Excellence Support Fund**, described in Section 4.2. Following its successful implementation, a gradual increase in allocated resources is expected.

Examples from BUT faculties:

- **Faculty of Business and Management:** IP is distributed to departments based on performance in Modules 1, 2, and 3 according to Methodology 17+ (national evaluation of universities). Outputs in FORD 5.2, the faculty's primary research field, are positively weighted to support quality outputs essential for programme accreditation.
- **Faculty of Electrical Engineering and Communication:** Evaluates departmental performance in creative activities, grant success, contract research, and revenues from knowledge transfer. Publications in Q1–Q3 journals are considered, particularly those authored by PhD students and early-career researchers, whose departments are thereby supported through IP.
- **Faculty of Mechanical Engineering:** Operates a **motivational fund** distributed across four categories: publications in Q1–Q3 journals, applied results in M1 Module, increases in contract research income, and revenues from IP commercialisation. Detailed rules are defined in the Dean's Directive. These incentives have led to a significant increase in commercialisation income over the past two years.

NATIONAL AND INTERNATIONAL COOPERATION

4.12 Important collaborations in R&D&I

The HEI will describe specific cases of R&D&I collaboration at the national level (maximum five examples) and the international level (maximum five examples), including examples of concrete results and impacts in the field of R&D&I beneficial for the HEI during the period of 2020–2024.

Maximum 300 words per example.

Self-assessment:

As documented in the M3 self-evaluation reports for individual Faculties / Institutes and elsewhere in this report (e.g., 4.10), BUT is intensively involved in national and international cooperation. In the past five years, BUT has cooperated with hundreds of industrial enterprises and research organisations both in the Czech Republic and abroad. The examples below therefore only illustrate the various possibilities of cooperation in different sectors.

Examples of cooperation at the national level:

① Cooperation with Škoda Auto, the largest car manufacturer in Czechia

BUT maintains university-wide collaboration with [Škoda Auto](#), one of the Czech Republic's leading automotive manufacturers. This cooperation involves several faculties and research areas. A key example is the long-standing partnership with the **Faculty of Mechanical Engineering**, focused on passenger vehicle thermomanagement, internal combustion engine (ICE) design, and vehicle testing.

As the automotive industry moves from ICE to electric drivetrains, the research has shifted toward advanced thermal management systems for electric vehicles. These systems address both component cooling and cabin thermal comfort. Research outcomes are directly applied at Škoda Auto, demonstrating strong industry impact.

The collaboration also engages PhD students, who conduct research within the Škoda Auto programme and at leading international institutions such as AUDI, VW, and Porsche. This contributes to knowledge exchange and strengthens links between academic and industrial research.

A major result of this partnership is the development of a new ICE tailored for emerging markets. The engine features a long-stroke cylinder unit, low vibration, robust design, innovative lubrication, and high efficiency with low fuel consumption. Designed for practical driving conditions, it is expected to reach annual sales in the tens of thousands in the Indian subcontinent and Southeast Asia, with potential future use in South America.

Additional collaborative research includes applying thermal comfort evaluation methods in HVAC development, studying air purification and aerosol removal in vehicle cabins, and simulating cabin environments to optimise comfort and energy efficiency. The cooperation also covers ventilation and filtration technologies, anti-fog systems in headlights, and new cooling systems for LED lighting.

② Long-term cooperation with TESCANA, an important electron microscope manufacturer

A strong example of R&D collaboration with industry at BUT is the long-term cooperation with [TESCANA](#), a leading manufacturer of electron microscopes headquartered in Brno with global

subsidiaries ([Tescan.cz](https://tescan.cz)). This collaboration involves **multiple faculties across BUT**, and includes both contractual research and student engagement.

For instance, at the **Faculty of Information Technology**, several image processing and analysis methods developed through theses work and research projects have been integrated into TESCAN products—such as machine learning-based segmentation methods for mineralogy. While these activities do not generate direct financial profit for FIT, they bring significant added value: they enhance TESCAN's technological development, strengthen the faculty's insight into industrial applications, and contribute positively to the institution's visibility and reputation. TESCAN is also part of FIT's partner program.

③ Strategic cooperation with Thermo Fisher Scientific, an important electron microscope and spectrometer manufacturer

[Thermo Fisher Scientific](https://www.thermofisher.com) is one of BUT's most significant partner organizations in CR, maintaining close collaboration with several faculties, including FIT, FEEC, FME, FCH and CEITEC. This long-standing partnership is driven by shared research interests, active involvement in joint projects, and Thermo Fisher's role as a major employer of BUT graduates.

The cooperation spans multiple areas—from sponsoring flagship events (e.g., CEITEC Summer School, Excel@FIT, Electron Microscopy Days) to providing internships, thesis supervision, and teaching support. Dedicated courses in Electron Microscopy, taught by Thermo Fisher specialists, are integrated into selected curricula. Thermo Fisher also contributes to BUT's governing and advisory boards, strengthening the link between academia and industry.

Joint R&D activities include national (e.g., TACR) and European projects (e.g., Horizon Europe, All2GaN within KDT JU), with substantial financial contributions from Thermo Fisher to various faculties, including MSc scholarship support. Strategic partnership agreements have been signed by multiple faculties, with a new university-wide agreement formalized in 2024.

The collaboration has yielded joint publications and ongoing patent applications. A notable success is the Atomic Hydrogen Source for SEM, developed within a TACR-funded project. This innovation — combining BUT's hardware development with Thermo Fisher's application expertise — won both the TAČR Business Prize and the public's top award in 2021. The technology is now being licensed for integration into Thermo Fisher's product lines, with strong global commercialization potential.

The **Faculty of Chemistry** which cooperates with Thermo Fisher Scientific through contract research. The Faculty members contribute to the development and methodology of standards for various analytical instruments supplied globally. The scope of this collaboration regularly reaches 1–2 million CZK (approx. 40–80 thousand EUR) per year.

④ Cooperation with Honeywell International s.r.o. - automation, the future of aviation, and energy transition

[Honeywell International s.r.o.](https://www.honeywell.com) is one of key industrial partners with R&D cooperation in aerospace and space or automotive field both through the applied project and contractual research. Projects solved during the evaluated period include a sustainable development base for own production of aircraft structures (National Competence Centre of Advanced Aerostructures Research), development and testing of bearings with appropriate lubrication for inter-satellite optical communication, meeting thermal and vibrational requirements research of actuators for space environment (TACR project), development of tools for noise vibration and harshness reduction of turbochargers of passenger cars and heavy duty trucks (TACR project) and many others.

The close relations are not limited to the joint research projects. Integrating project-oriented approaches into Industrial Design master's programme offers students practical experience through [workshops with Honeywell](#). Collaboration with [Honeywell and University Hospital Brno](#) helped identify and address workflow weaknesses in the Cardiology Department, fostering critical thinking and real-world problem-solving skills. This initiative enhances the educational experience by aligning academic training with industry needs and preparing students to meet contemporary challenges in their professional careers.

Additionally, students engaged with various stakeholders, including industrial partners and healthcare professionals, to ensure their designs met user needs and received valuable feedback for further improvement. Honeywell also take part in the [Industrial Enterprise Award](#) organized by Faculty of mechanical engineering to enable companies to gain access to talented and motivated students during or after their studies. Kateřina Dočekalová Lead Project Manager at Honeywell International is a member of scientific board of Mechanical Engineering of Biological and Bio-inspired Systems - MEBioSys project (Johannes Amos Comenius Programme, specific call Excellent Research).

5 Cooperation with semiconductor company onsemi

[Onsemi](#) company is the most important semiconductor company in the Czech Republic, whereas BUT, mainly through the Faculty of Electrical Engineering and Communication, has a long-lasting cooperation that started already 25 years ago. Together we deal research and development and manufacturing of semiconductor technologies, devices and chip design. The onsemi staff is actively involved in education of our students in coursed being focused on chip design and semiconductor manufacturing technologies. Thank to such active involvement, the subjects' content reflects actual trends in developing technologies such as SiC and GaN. Onsemi was also introduced in preparation of the study programs [Automotive Electronics and Electromobility](#) (master) and Chip Design and Modern Semiconductor Technologies ([bachelor](#) and [master](#)). Thanks to the partnership, onsemi provides financial and material support of technical laboratories and together with BUT is part of [Czech Semiconductor Centre](#) and the [Czech National Semiconductor Cluster](#). Onsemi significantly supports educational internships for our students and teachers, provides scholarships for best students, leads bachelor and diploma theses and supports student science conferences and contests. The dimension of the partnership is further proved by cooperation on R&D projects with BUT with total budget over 12 mil. EUR so far.

The cooperation with onsemi is ongoing. Next to continuous activities in education and research, we discuss the issues how to attract more young people to be interested in and study STEM fields, deal about Industrial PhD deployment and recognize and support talents.

Examples of cooperation at the international level:

1 Long-term cooperation with European Space Agency

BUT has a long-standing collaboration with the [European Space Agency](#) (ESA), involving several faculties in ESA-funded projects. A notable example is the cooperation of the Faculty of Electrical Engineering and Communication (FEEC) on the MetOp-SG A and B satellites, operated by EUMETSAT as part of Europe's meteorological satellite system. In partnership with Beyond Gravity (formerly RUAG Space), FEEC researchers developed control and power supply units for the positioning system of the 3MI instrument — a passive optical radiometer for climate and atmospheric monitoring. The solution had to meet extremely demanding requirements for mechanical reliability and resistance

to high temperatures, radiation, and vibrations experienced during launch and operation in Low Earth Orbit (LEO).

At the Faculty of Mechanical Engineering (FME), several ESA projects have been completed, particularly in the field of space testing infrastructure. Key examples include involvement in the PLATO mission (Planetary Transits and Oscillations of Stars), which will use 26 cameras to study Earth-like exoplanets, and the ROSE-L project, focused on radar observation systems. FME has also contributed to research in additive manufacturing for aerospace, including material processing, production of structural components, and thermal management systems. Other collaborative efforts include the development of an integrated Moon Drone platform, a thermal switch for satellite heat regulation, and a CubeSat mission for solar eclipse observation. Additionally, researchers have studied the impact of micro-scale surface geometries on lubricant evaporation in space environments.

② Long-term academic cooperation with Lappeenranta-Lahti University of Technology, Finland

A good example of a successful academic exchange is the one of the FIT and the [Lappeenranta-Lahti University of Technology \(LUT\)](#), who became member of the [EULiST European University](#) along with BUT. The exchange started already in 1997 by a visit of prof. Pavel Zemčik of FIT in Lappeenranta, and the exchanges gradually became regular and lead not only to [double degree programs in MSc and PhD](#), but also to a **number of joint publications**. Prof. Zemčik [was awarded dr. h. c. from LUT in 2022](#), and has been serving as a visiting professor since 2023. From the Finnish side the most active visitors are prof. Heikki Kälviäinen, who received a BUT Silver Medal in 2022, and assoc. prof. Tuomas Eerola, who visited BUT in 2019 during his sabbatical. We are also preparing visiting professorship for prof. Heikki Kälviäinen who is planning to spend a sabbatical at BUT in 2025.

③ Long term cooperation between BUT and Rigaku Corporation, Japan

Since 2015, a research group of Prof. J. Kaiser at CEITEC, has been actively cooperating with [Rigaku Corporation](#), a Japanese leader in X-ray technology, through an application laboratory at CEITEC BUT. This collaboration focuses on X-ray micro- and nano-computed tomography (CT), where CEITEC serves as a demonstration center for Rigaku's cutting-edge CT technology. The lab provides demonstrations for universities and companies across Europe, trains new users, and produces marketing materials showcasing the capabilities of Rigaku's instruments.

A key aspect of this partnership is the internship program for Ph.D. students, established in 2017. Each year, a selected Ph.D. student from BUT spends three to six months at Rigaku's R&D center in Haijima, Tokyo, with full financial support from Rigaku Corporation. This opportunity allows students to gain hands-on experience in X-ray technology development, contributing to their academic and professional growth. The program has been running successfully except during the COVID-19 pandemic.

The cooperation extends beyond training and marketing, as both parties engage in joint development projects in the field of CT imaging. These projects lead to direct implementation of research findings into Rigaku's software and hardware, enhancing the company's technological advancements. Additionally, CEITEC BUT plays a crucial role in testing new Rigaku nano-CT hardware and software modules, ensuring their performance before market release.

A significant benefit of this partnership is the regular free upgrades of Rigaku's nano-CT systems at CEITEC BUT, ensuring that the University always has access to the latest advancements in the field. Indirectly, this collaboration also laid the foundation for the establishment of BUT spin-off company,

Cactux s.r.o., which specializes in hardware and software solutions for X-ray tomography (see more in CEITEC M3 report).

More information are available at: <https://www.ceitec.eu/ceitec-has-signed-an-extension-of-the-cooperation-agreement-with-the-japanese-company-rigaku/t10225>

4 Cooperation with Korea Electric Power Corporation (KEPCO), South Korea

[Korea Electric Power Corporation](#) (KEPCO) is a state-controlled Korean company responsible for the generation, distribution, and partially the transmission of electricity. It operates 26 nuclear units alongside gas, coal, hydro, solar, and wind power plants. One of its subsidiaries is the [KEPCO International Nuclear Graduate School \(KINGS\)](#) — a prestigious University offering master's and doctoral programmes in nuclear engineering, with 50% international students.

Cooperation between BUT and KINGS began in 2018 and has since evolved into a structured student mobility programme. Regular four-month internships at KINGS are now offered to BUT students, with numbers increasing from the initial two to four, eight, and from 2025, ten students per semester. So far, 37 students have participated, with 20 more on the waiting list. Four students extended their stay to complete their Master's degrees at KINGS — one was even named best student of the year.

In addition to student mobility, KINGS professors regularly lecture at BUT on specialized nuclear topics not covered by our curriculum. BUT experts are also invited to KINGS. As of the end of 2024, both institutions have agreed on joint PhD supervision, internships at both sites, and are preparing a double-degree programme.

Joint research efforts focus on nuclear safety assessment and reactor physics. In nuclear safety, the partnership has secured a three-year international [DELTA2](#) project funded by the Technology Agency of the Czech Republic.

This collaboration is of strategic importance, especially considering that KHNP, a KEPCO subsidiary, is set to build two APR1000 units at the Dukovany nuclear power plant near Brno. Our vision is that every nuclear engineering student at BUT gains first-hand experience in nuclear energy in Korea — and we are actively working to make that a reality.

5 Cooperation with TU Wien, Austria

BUT and [Technische Universität Wien](#) (TU Wien) have developed a long-term partnership across multiple disciplines, grounded in joint research, academic exchange, and strategic collaboration. The cooperation dates back over two decades and has included a series of bilateral and multilateral projects, mobility schemes, and educational programmes.

Examples of the cooperation between FCE BUT and TU Wien include the [DeTaCon](#) and [FinFraM](#) projects focused on the mechanical behaviour of cementitious composites, as well as the **Danube Region initiative** on fiber-reinforced alkali-activated materials. These activities have been supported by Austria–Czech Republic cooperation programmes.

Recent achievements include the 2024 Blended Intensive Programme (BIP) [Material and Structural Integrity Aspects](#) under Erasmus+, and high-level contract research such as the FFG-funded study on shear behaviour of post-tensioned girders. Current joint research also explores the environmental performance of natural-based materials to improve indoor comfort, contributing to the sustainability goals of both institutions.

One of the most prestigious outcomes of this partnership is [the ERC Synergy project FATRESCON](#) coordinated by prof. Miroslav Vořechovský, launched in 2025. The project, conducted in

collaboration with TU Wien and RWTH Aachen, focuses on the development of fatigue-resistant concrete binders with reduced CO₂ emissions. This marks a major scientific milestone and highlights BUT's ability to contribute to top-level European research addressing global challenges.

The collaboration between FA BUT and TU Wien also dates back to 1990s, when first cross-border projects took place. Recent developments in the collaboration include a successful co-application to host a prestigious PhD workshop under the AESOP: Association of European Schools of Planning.

Furthermore, CEITEC BUT and TU Wien have built a dynamic scientific network, particularly in the fields of nanotechnology and materials science. This collaboration has led to a steady rise in joint publications, reflecting the growing depth of the partnership.

STUDIES

4.13 Doctoral studies

The HEI will briefly describe the organisation of the doctoral studies (if there are any doctoral study programmes³⁹). HEI will comment on:

- Structure and organization of studies.
- A system of cooperation between PhD students and their supervisors.
- Basic statistics (including drop-out rate, student workload, etc.).
- Information on promotion and recruitment schemes.
- Cooperation within doctoral studies (e.g., Czech Academy of Sciences, application sphere, building open study programmes for foreign nationals and creating international networks of study programmes, “joint degree”, “cotutelle”, etc.).
- Student care system (e.g., counselling, wellbeing care, career guidance).
- A system for tracking the future careers of graduates⁴⁰.
- Other relevant data, such as the existence of a doctoral school, basic soft skills courses, etc. at the discretion of the HEI.

The HEI shall support this with appropriate examples (e.g. a model example of doctoral student cooperation with their supervisor, statistics on collaboration within doctoral studies, specific examples within doctoral studies, statistics on the use of student care systems, etc.).

Maximum 300 words per point.

Self-assessment:

• Structure and organisation of studies

The structure of doctoral studies at BUT follows the framework set by Act No. 111/1998 Coll. (Higher Education Act), which applies to all Czech higher education institutions. Specifics are outlined in the [Study and Examination Rules of BUT](#).

Each doctoral study programme is overseen by the Board of Studies composed of leading academics and practitioners. The studies are conducted either in full-time or combined (part-time) form, usually four years. Full-time students are entitled to a scholarship, as defined in the [Scholarship Rules of BUT](#).

Doctoral candidates follow an Individual Study Plan (ISP) under the guidance of a supervisor, whose responsibilities and evaluation criteria are set in [Guideline No. 7/2024 Standard of Ph.D. Supervisor](#). Students regularly consult with their supervisor and present progress. The ISP is formally reviewed at least once a year by the Board of Studies, which may recommend scholarship adjustments or study termination if obligations are not met.

BUT also offers structured opportunities for dual supervision (cotutelle) in collaboration with international universities (see [Guideline No. 1/2020](#)), and is the only university in the Czech Republic with a clearly regulated model for Industrial Doctorates, allowing students to work on applied research in partnership with industry ([Guideline No. 4/2024 - Industrial Doctorates at BUT](#)).

Unlike bachelor's and master's studies, doctoral programmes do not use ECTS for progress evaluation. The focus is on fulfilling the tasks outlined in the ISP and on producing high-quality research.

³⁹ If the HEI does not organise any doctoral programme, it will explicitly state this information in the self-evaluation report.

⁴⁰ The HEI will list the top five highest ranked graduates in academia, the private sector, and public administration over the past five years.

Doctoral programmes are accredited at all faculties and some university institutes. Programmes in fields under BUT's institutional accreditation are approved by the [Internal Evaluation Board](#); others by the [National Accreditation Bureau for Higher Education](#). Most programmes are accredited for a period of 10 years.

• A system of cooperation between PhD students and their supervisors

Doctoral studies at BUT are conducted based on an Individual Study Plan (ISP), prepared by each student in cooperation with their supervisor, who plays a central role throughout the study. The supervisor is responsible for the student's scientific and professional development, provides regular consultations, facilitates networking, and guides the student in presenting research results. In specific cases, a specialist supervisor may also support the student in a narrower field of expertise.

The supervisor's responsibilities, selection criteria, and performance expectations are detailed in the [Guideline No. 7/2024 Standard of Ph.D. Supervisor](#).

Newly admitted students are required to draft their ISP with their supervisor, based on the topic for which they were accepted. The ISP must comply with Article 32 of the [Study and Examination Rules of BUT](#). Once prepared, the ISP is reviewed by the head of the department/training institute and the Doctoral board. Their comments are forwarded to the Dean, who either approves the ISP or requests revisions.

The ISP must include:

- the dissertation topic and study focus,
- compulsory coursework,
- internships or stays abroad,
- participation in conferences, seminars, or summer schools,
- the date of the state doctoral examination,
- and possible teaching duties.

Beyond the framework of an individual study plan, students are very often involved in projects. These are usually projects where the supervisor is the principal investigator or a member of the project team.

• Basic statistics (including drop-out rate, student workload, etc.)

Basic statistical indicators of doctoral studies include the following characteristics:

- Approximately 1600 students are currently enrolled in BUT doctoral study programmes.
 - Of these, 26% are international students. The largest number of students are from Slovakia (200 students), 170 students from approximately 50 other countries.
 - Over the last 10 years, the number of foreign PhD students has increased by more than 50%.
- Every year, around 160 graduates complete their doctoral studies at all faculties and units.
 - Students most often defend their doctoral thesis in their fifth to seventh year of study.
 - The documented statistics show that the failure rate in doctoral studies at BUT in the last three years is 20%.
- Most of the doctoral theses (more than 2/3) are written and defended in English.
 - There has been a significant increase in the number of doctoral theses in English over the last five years, from 59 in the 2018/19 academic year to 113 in 2023/24.
- On average, PhD students spend half an hour a day on direct teaching.

- The teaching load of PhD students depends on the individual faculties and is shown in the table below.
- The reform of doctoral studies based on the amendment to the Higher Education Act removes the teaching obligation of doctoral students.

Average teaching load of PhD students (number of hours per year):

Faculty	2021/22	2022/23	2023/24
CEITEC BUT	13	6	6
FA	33	48	70
FCE	30	70	99
FFA	146	122	115
FEEC	114	123	124
FCH	53	47	60
FIT	15	46	44
FBM	108	99	96
FME	68	64	59
IFE	17	10	7
Weighted average	58	66	70

• **Information on promotion and recruitment schemes**

BUT has accredited most of its doctoral **study programmes** for teaching in both **Czech and English**. The admission procedure for doctoral studies is based on the faculty admission guidelines issued annually for each study programme or group of programmes by the dean of the faculty or the director of the institute. In particular, the guidelines specify the conditions for admission in individual study programmes and, taking into account staff and other capacities, determine the number of students admitted to the delivered study programme. The topics of doctoral studies for which individual students apply are made available to applicants on the website of each faculty and are also part of BUT information system for study. **Basic promotion** of doctoral studies is provided by detailed information on **BUT website** and **social networks**.

However, doctoral studies are more individualised in nature than studies at lower levels of education, which is why the recruitment of applicants is often based on specific disciplinary contacts. For those interested, some faculties organise **recruitment events** at which the topics of doctoral studies are presented. Potential PhD applicants can meet BUT at various events, both scientific and student-focused. Many applicants (internal and external) are already in contact with their future supervisors during their Master's studies.

• **Cooperation within doctoral studies (e.g., CAS, application sphere, building open study programmes for foreign nationals and creating international networks of study programmes, "joint degree", "cotutelle", etc.)**

BUT actively develops cooperation in doctoral education at both the national and international level. A key national partner is the Czech Academy of Sciences (CAS), with which BUT has signed an Agreement on Cooperation in the Implementation of Doctoral Study Programmes. Under this agreement, staff from CAS institutes can serve as supervisors at BUT faculties, strengthening academic expertise and research collaboration.

BUT also builds strong links with the application sphere, particularly through the concept of [Industrial Doctorates at BUT \(Directive No. 4/2024\)](#). This model allows doctoral students to conduct research in collaboration with industrial partners such as Škoda Auto, VZLÚ (National Centre for Aerospace), or TDK Electronics, combining theoretical training with real-world application. Industrial doctorates enhance employability and increase the relevance of doctoral training for both students and industry.

On the international level, BUT supports **cotutelle doctoral studies (double supervision of dissertations)** through formal agreements with foreign universities. Each cotutelle contract clearly defines study conditions and responsibilities. Examples of partner institutions include RWTH Aachen, Universidad Carlos III Madrid, Université Grenoble Alpes, and University of Bari Aldo Moro (CEITEC) or Lappeenranta-Lahti University of Technology (FIT).

To further strengthen collaboration with the business sector, BUT has established an [Industry Council](#) as an advisory body of the Rector. It serves as a platform for dialogue in the areas of education, research, innovation, and knowledge transfer.

PhD students are also supported through the [ContriBUTe](#) innovation and entrepreneurial ecosystem, which offers mentoring, events, and initiatives such as [Go to Business!](#), a programme rewarding student start-up ideas.

Through the EULIST Alliance, PhD students benefit from access to [training programmes](#), [mobility grants](#), and networking. The EULIST Early-Career Researchers Centre will launch a Global EULIST Conference in November 2025, further expanding opportunities for international engagement.

• Student care system (e.g., counselling, wellbeing care, career guidance)

Brno University of Technology (BUT) provides a broad support system for doctoral students, focused on wellbeing, personal development, and career guidance.

The [Continuing Education and Counselling Centre](#) offers professional and psychological counselling services. Common topics include motivation, stress management, interpersonal relationships, and balancing doctoral studies with family life. Doctoral students can also request the development of a professional-personality profile to support self-awareness, including personal strengths, stress-coping styles, and motivation.

Students can also use the services of [the Alfons Centre](#), which provides counselling and support services to applicants and students with special needs. (see <https://alfons.vutbr.cz/en/>).

BUT's [Central Library](#) provides training in areas such as academic writing, research promotion, data access and management etc. (see <https://www.vut.cz/en/uk/il/coming-soon>).

Physical activity and sport are also supported through the [Centre of Sports Activities](#), where students can choose from a wide range of courses or use the modern university sports complex in their free time.

BUT operates under a Code of Conduct, ensuring a respectful academic environment. To strengthen social safety, the university has an organised [network of trained contact persons](#) who students can approach in case of misconduct or inappropriate behaviour.

Each year, BUT organises a PhD Day, where doctoral students receive information about their studies, support services, mobility and funding opportunities, and options for work-life balance.

Faculties also run wellbeing activities. The [FME WellBeING event](#) offers yoga sessions and mental health workshops. The [Music from FEEC](#) music festival and [FASTfest](#) (FCE) are regular social events that foster community and inclusion across the University.

All the measures to reconcile the work and family life of researchers described in [chapter 4.7](#) are available also to PhD students.

- **A system for tracking the future careers of graduates**

The system of monitoring the future career of BUT graduates is currently based on the implementation of surveys among graduates. Since 2024, the survey system has been standardised and repeated once a year.

Since November 2024, [a unified alumni portal of BUT](#) (in Czech only) has been in operation, enabling more active communication with alumni and building an alumni community, as well as providing a tool for more efficient tracking of the careers of registered alumni.

The achievements of graduates are presented not only on BUT website, but also through other communication channels. For example, a [special issue of the publicly distributed university magazine News at BUT](#) was dedicated to successful graduates.

The important graduates who have reached top career positions in their respective fields include [Miloslav Kala](#), President of the SAO; Mirek Topolánek, former Prime Minister of the Czech Republic; [Tomáš Mikolov](#), winner of the Neuron Prize, former member of the Google Brain and Facebook AI Research team in Silicon Valley; [Radim Jančura](#), founder and owner of Student Agency and RegioJet; [Lukáš Polok](#), research engineer at Apple Inc.; [Jakub Sochor](#), CTO at Innovatrics, [Karel Masařík](#), CEO of CODASIP, etc.

- **Other relevant data, such as the existence of a doctoral school, basic soft skills courses, etc. at the discretion of the HEI**

BUT offers a unique inter-university programme based on CEITEC research programmes. Currently, there is one doctoral programme of this kind available, [Advanced Materials and Nanosciences](#). This doctoral school is an international, interdisciplinary and rapidly developing educational programme. Students have access to state-of-the-art research infrastructure and training in an interdisciplinary scientific community.

In September 2025, the University-wide Doctoral School will be launched as a supportive educational platform for students of doctoral programmes at BUT in the field of further education and their interdisciplinary university-wide cooperation. The doctoral school will focus on the development of doctoral students' competences in the field of scientific work and other competences, such as professional publishing, project work, data handling, teamwork, career development, etc.

In March 2025, a pilot course aimed at enhancing the teaching competences of PhD students and early career academics was launched. The course will focus on learning management, digital competences, communication skills, self-reflection, teaching assessment, and teaching methods. This course will then continue on a regular basis from September 2025 on.

The high success rate in [the Brno Ph.D. Talent Scholarship Programme](#), which is attended by Ph.D. students across all faculties of BUT every year, is a testimony to the quality of BUT Ph.D. students.

IMPLEMENTATION OF RECOMMENDATIONS

4.14 Implementation of the recommendations in Module 4

The HEI will briefly describe how it has implemented the recommendations for Module 4 from the previous evaluation period, if applicable.

Maximum 1000 words

Self-assessment:

An internal promotion system based on a candidate's merit would be preferable than having to wait until a position becomes vacant and then have to compete with potentially many internal and external candidates.

BUT has introduced a tenure-track system through its internal [Career Rules](#), designed to support merit-based career progression and long-term retention of talented staff.

Assistant Professors are appointed via open selection procedures with initial three-year contracts, renewable up to two times based on positive evaluations—allowing a maximum tenure of nine years. This period is intended to give candidates sufficient time to meet the criteria for habilitation and promotion to Associate Professor.

For those who achieve habilitation while holding an Assistant Professor position at BUT, promotion to Associate Professor comes with an indefinite contract. The same applies to Professors who have previously served as Associate Professors at BUT and completed the appointment process.

New hires at the Associate Professor or Professor level may initially receive fixed-term contracts. After a standard one-year evaluation, contracts can be extended to indefinite if the individual demonstrates the required competencies and quality of work.

This system enables structured, merit-based internal advancement without waiting for vacancies, addressing the advisory board's recommendation and supporting career development within the institution.

From the perspective of internationalization, steps should be taken to develop international doctoral study programs.

Since the last evaluation, substantial progress has been made in the development of international doctoral study programmes. Today, nearly all doctoral programmes offered in Czech are also available in English. A total of 32 doctoral programmes are offered in Czech, while 28 are available in English—of which 27 are both in Czech and English, 1 is offered exclusively in English, and 5 exclusively in Czech. Additionally, most programmes are also offered in a combined (part-time) format, providing better flexibility for students.

Additionally, CEITEC BUT offers the [Advanced Materials and Nanosciences PhD School](#), where 55% students are international. **Double degree program** is available e.g. at Faculty of Electrical Engineering and Communication ([Electronics and Information Technologies](#)). A complete list of doctoral programs, including filtering options by language, study mode, and academic year, is available [here](#).

Many sound decisions have already been in line with the general trends in top universities, a particular example of which is the creation of the Open Access Fund for supporting publishing Open Access papers. Similarly, an Open Data initiative could also be considered in order to further enhance the international profile of BUT by provide international researchers access to highly valuable research data.

BUT has robust human and technical capacities for research data management. It applies an open data policy for publicly funded projects in line with EU and Czech legislation, balancing openness with IP protection. See more in [chapter 4.4](#).

The number of women in the University, and especially at senior positions is very low. More needs to be done to address this balance. While any promotion should be on merit, there should be recognition and support for the work-life choices that staff, and especially women, may have to make. An official Gender-Equality Plan should be developed for the whole of BUT.

All measures implemented to support gender equality are described in [chapter 4.7](#) and further detailed on the [Equal Opportunities website](#).

There is a lot of highly valuable equipment across BUT. A clear means of sharing this, without unduly negatively impacting on any activity, is needed to reduce costs and avoid possible under-utilisation of expensive equipment.

BUT hosts one of the Czech Republic's key large research infrastructures (LRI), [CzechNanoLab](#) and is a partner of LRI [Czech-Biolmaging](#). BUT has a vast experience with sharing research infrastructure because every research organization operating the LRI has to provide access to all potential users based on the principle of "open access." See more in [chapter 4.9](#).

Regarding research infrastructure which is not a part of LRI, to minimize resource duplication, BUT is undertaking a comprehensive monitoring project for all research equipment valued over 0.5 million CZK (approximately 20,000 EUR). For each device, we are compiling detailed information on its specifications, usage conditions, sharing protocols, and operational support, creating a basis for efficient resource sharing across departments and potentially partner institutions. Each piece of equipment will receive a unique identifier (PIDINST), in alignment with the Research Data Alliance's standards, facilitating traceable and optimized equipment utilization.

This ongoing inventory will culminate in a searchable, centralized database for research equipment, allowing researchers to easily book and record equipment usage, akin to the current CEITEC Nano system. This approach aligns with the advisory board's recommendation for a joint infrastructure database, making shared resources more accessible and preventing unnecessary duplication.

Additionally, BUT is developing a shareable equipment database across institutions as part of its involvement in the [European University EULIST](#) initiative.

More in [chapter 4.9](#).

Clearer details on how to evaluate teams across the University are needed. Also some structures should be put in place to enable potential new research topics to be formally evaluated early so that courses and teams can be put in place, should such new topics be deemed strategically important.

All relevant departments at BUT have undergone a two-step evaluation process which is described in [chapter 4.3](#) (including the evaluation of individual departments and their research vision and research topics). More details also [here](#). Evaluation of new strategic research areas is described in [chapter 5.1](#).

A lot more can, and should, be done at BUT to promote an "entrepreneurial spirit" amongst staff and students. BUT could look to engage as a whole with those Faculties that are currently promoting such a spirit, e.g. BMS and FIT as well as regional initiatives, such as the South Moravian Innovation Centre (JIC). Courses and seminars from people who have actually spun companies out successfully should be made available to all interested BUT staff and students. Also

the TTO should look to engage closely with local business angel and other venture capital networks to provide straightforward access to finance for any spin out company.

BUT actively supports entrepreneurial thinking through its innovation ecosystem [ContriBUTe](#), which offers mentoring and programmes for students and staff. The University closely collaborates with the **South Moravian Innovation Centre (JIC)**, co-founded by BUT, to support spin-offs and start-ups, and recently launched a **Proof-of-Concept support project**. The **Industry Council**, established in 2023, strengthens links with the application sphere and provides strategic guidance in innovation and commercialization. BUT recognises the need to further promote entrepreneurial culture across all faculties and is working toward stronger internal synergies and broader access to external expertise and funding networks. See more in [chapters 4.4](#) and [4.13](#).

A number of units of the University, e.g. CEITEC, have established some form of International Scientific Advisory Board. This is an excellent way of gaining highly valuable feedback from recognised foreign experts to verify the strategic objectives of R&D&I on an international level. The IEP recommends that similar such Boards are established within all Faculties.

An [International Scientific Advisory Board](#) was established at the level of the university in 2023. It serves the main independent advisory body of the University, faculties and university institutes especially in the field of the strategic development and improvement of the quality of scientific, development, innovation, and educational activities. Its members are renowned international experts drawn from the main scientific fields of the faculties and institutes of BUT.

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 4

Document name	No. criteria	Location (link in HTML)
Activity Report of the Social Safety Coordinator at BUT	4.7.	https://www.vut.cz/en/but/employee-support/social-safety/prevention/final-report-coordinator-2022-202402-en-pdf-p264378
Alfons Counselling Centre at BUT	4.2.; 4.7.; 4.13.	https://alfons.vutbr.cz/en/
Career Rules at BUT	4.2.; 4.5.; 4.6.; 4.7.	https://www.vut.cz/en/board/internal-legislation-but/guideline-no-15-2024-but-career-rules-d275525
CEITEC PhD School	4.2.; 4.13.	https://www.ceitec.cz/phd-school/?urltitle=ceitec-phd-school
Code of Conduct of BUT	4.3.; 4.4.	https://www.vut.cz/en/board/internal-legislation-but/-d233109
Code of Gender-Sensitive Communication at BUT	4.7.	https://www.vut.cz/en/but/employee-support/news-f122429/the-code-of-gender-sensitive-communication-at-but-d266996/code-gender-senzitive-communication-at-but-p274784
Continuing Education and Counselling Centre of BUT	4.2.; 4.4.; 4.13.	https://lli.vutbr.cz/en
Ethics Committee BUT	4.3.; 4.4.	https://www.vut.cz/en/but/structure/ethics-committee

EUA Evaluation Report	4.3.	https://www.vut.cz/uredni-deska/hodnoceni-kvality/eua-evaluation-report-2023-p236747
Gender Equality Plan of the BUT 2022-2024	4.7.	https://www.vut.cz/en/but/hr-award/news/aj-1-gender-equality-plan-of-the-but-2022-2024-final-pdf-p218096
Gender Equality Plan of the BUT 2025-2028	4.7.	https://www.vut.cz/vut/podpora-zamestnancu/aktuality-f122429/plan-genderove-rovnosti-vut-2025-2028-d275204/gender-equality-plan-but-20025-2028-p281822
HR Award at BUT	4.5.; 4.6.; 4.7.	https://www.vut.cz/en/but/employee-support/hr-award
Industrial Doctorates at BUT	4.13.	https://www.vut.cz/en/board/internal-legislation-but/-d256964
Industry Council BUT	4.1.; 4.4.; 4.13.	https://www.vut.cz/en/but/structure/ic
Innovation and Entrepreneurial Ecosystem at BUT - ContriBUTe	4.2.; 4.4.; 4.13.	https://www.vut.cz/en/contribute
Institutional Evaluation 2024	4.3.	https://www.vut.cz/en/rad/quality-assurance/2024
Internal Evaluation 2023	4.3.; 4.13.	https://www.vut.cz/en/rad/quality-assurance/2023
Internal Evaluation Board	4.3.	https://www.vut.cz/en/but/structure/internal-evaluation-board
Internal Grant Agency	4.2.	https://www.vut.cz/en/rad/specific-research
International Agreements	4.8.	https://www.vut.cz/en/cooperation/international-agreements
International Scientific Advisory Board BUT	4.1.; 4.3.	https://www.vut.cz/en/rad/international-scientific-advisory-board
News at BUT	4.4.	https://www.zvut.cz/en
Open Access Fund	4.3.	https://www.vut.cz/en/rad/openscience/open-access/fund
Open Science Strategy at the BUT for the period 2022-2025	4.4.	https://www.vut.cz/en/rad/results/strategie-open-science-na-vut-2024-25-final-en-pdf-p262577
Protection of Personal Data at BUT	4.6.	https://www.vut.cz/en/board/internal-legislation-but/-d171466
Quality Management and Evaluation	4.3.	https://www.vut.cz/en/board/internal-quality-evaluation
Report on the activities of the Social Safety	4.3.	https://www.vut.cz/en/but/employee-support/news-f122429/report-on-the-activities-of-

Coordinator (Ombudsman) at the BUT		the-social-safety-coordinator-(ombudsman)-at-the-but-d266034
Report the Internal Evaluation of the Quality BUT	4.3.	https://www.vut.cz/en/board/internal-quality-evaluation/report-the-internal-evaluation-of-the-quality-p292874
Research Infrastructures	4.2.; 4.9.	https://www.vut.cz/en/rad/infrastructure
Research Quality Assurance System	4.2.; 4.3.	https://www.vut.cz/en/rad/quality-assurance
Scholarship Rules of BUT	4.13.	https://www.vut.cz/en/board/internal-legislation-but/the-scholarship-rules-of-but-d140722
Science and Research at BUT	4.2.	https://www.vut.cz/en/rad
Selection Procedure Rules at BUT	4.6.; 4.7.	https://www.vut.cz/en/board/internal-legislation-but/-d234088
Social Safety at BUT	4.3.; 4.7.	https://www.vut.cz/en/but/employee-support/social-safety
Social Safety at BUT (Guideline)	4.7.	https://www.vut.cz/en/board/internal-legislation-but/-d271239
Standards of Ph.D. Supervisor	4.13.	https://www.vut.cz/en/board/internal-legislation-but/-d268205
Statute of BUT	4.1.	https://www.vut.cz/en/board/internal-legislation-but/internal-regulation-statute-of-but-d260207
Strategic Plan of BUT for 2021+	4.6.	https://www.vut.cz/en/board/strategic-plans/strategic-plans-f127629/strategic-plan-of-but-for-2021-d237093
Study and Examination Rules of BUT	4.13	https://www.vut.cz/en/board/internal-legislation-but/study-and-examination-rules-of-but-d149085
Supporting Research Excellence at BUT	4.2.	https://www.vut.cz/en/rad/excellence
Sustainability Strategy of BUT	4.4.	https://www.vut.cz/en/sustainability/sustainability-strategy-pdf-p287266
Sustainable University	4.4.	https://www.vut.cz/en/sustainability
Wage Rules of BUT	4.6.; 4.7.	https://www.vut.cz/en/board/internal-legislation-but/-d203925
Whistleblower Protection	4.3.	https://www.vut.cz/en/board/whistleblower-protection

MODULE 5 - STRATEGY AND POLICIES

5.1 Mission and vision of the evaluated institution in R&D

The HEI will briefly describe its mission and vision with emphasis on R&D&I in general and its R&D&I capacities in the implemented R&D&I fields⁴¹ (Tables 5.1.1 and 5.1.2). In particular, the HEI's vision covers the following five-year period and must relate to the strategic objectives of the Provider, the National Policy on Research, Development, and Innovation of the Czech Republic 2021+, the Gender Equality Strategy 2021-2030, and other higher national and supranational strategic documents in the field of R&D&I (Table 5.1.3). The HEI shall complement the description with active references to its Strategic plan for the teaching, scholarly, scientific, research, development, artistic, and other creative activities of the higher education institution (regarding the results and recommendations from the previous evaluation period, if the evaluated HEI participated in it). The HEI shall describe how the vision and mission were implemented during the period of 2020–2024.

Maximum 2000 words.

Self-assessment:

The mission and vision of BUT reflect all key roles and focus areas of the institution:

- educational activities,
- research, development, artistic and creative activities,
- the University's social responsibility (i.e. the so-called third role),
- governance and internal administration.

The **full wording of the BUT mission** is included in the [Statute of BUT](#) (Preamble, pp. 1–3), and a shorter version is provided in the introductory section of this evaluation document (title pages). The University's vision is also embedded in the Statute (Article 2).

Given the extensive scope of both the mission and vision, which exceeds the length permitted under the terms of reference for this criterion, only selected relevant excerpts are presented and commented on in the following sections.

The vision of BUT related to the research, development, artistic and creative activities:

In line with its mission, BUT bases its strategy on the **vision of a modern, open and research-oriented technical university**, which, in close reflection of societal needs, values and the principles of democracy and humanity, builds its international competitiveness on knowledge excellence, creative uniqueness and academic integrity of its staff, students and graduates. These individuals, through their skills and achievements, effectively contribute to solving global societal challenges. The University actively nurtures the continuous professional and personal development of talents among its employees and students, builds on the cooperation with outstanding alumni and creates attractive conditions for attracting talented study applicants, leading experts and talented candidates from the Czech Republic, Slovakia and abroad, interested in academic and creative work at the University in teaching, research, artistic and other creative activities.

In the field of education, BUT aims to be a respected provider of high-quality and competitive university education, whose uniqueness is built not only on the top expertise but also on developing students' competencies in critical thinking, imagination, creativity, the ability to seek innovative solutions to challenges, and the development of their leadership qualities. This is achieved through the connection between research and teaching, and the synergy of technical, economic, managerial and artistic disciplines. BUT: a) perceives education and teaching as its primary mission, b) adapts

⁴¹ For so-called R&D&I capacities, see Definition of Terms in Methodology HEI2025+.

the structure and content of its programmes to meet the educational needs of study applicants, society, the national economy and employers, c) supports the competitiveness of its students and graduates by:

- building on the integration of teaching with research and the connection between technology and the arts,
- developing students' critical thinking, creativity and entrepreneurship skills as key factors for the success of its graduates,
- benefiting from the synergy between its technical, economic and artistic disciplines.

In the fields of research, development, artistic and other creative activities, BUT aims to advance knowledge, acquire new insights, explore their practical applications and provide innovative solutions to address global societal challenges. BUT strives to establish itself internationally as a provider of cutting-edge knowledge and creator of innovative solutions, while collaborating with both public and private partners to contribute to the development of a knowledge- and innovation-based national economy and strengthening its international competitiveness.

In its efforts to fulfil its research mission and vision, BUT focuses on **strategic research areas** that have been in 2023 identified and defined by the BUT management based on the following criteria:

- concentration and size of research personnel and infrastructure capacity,
- the qualitative and quantitative parameters of research achieved,
- project and related financial performance.

In these selected areas, BUT achieves international competitiveness, demonstrated by the quality of its basic and applied research outcomes. These strategic research areas are developed through coordinated interfaculty and interdisciplinary collaboration, enabling the concentration of personnel, knowledge, and infrastructure capacities. This approach **strengthens the University's competitive potential and success in research funding**.

The areas **foster collaboration between departments and institutes across faculties** that share thematically related, complementary, or overlapping research interests. They support the integration of expertise and capacity while aligning with societal priorities of both the Czech Republic and the EU, including the national economic strategy and broader societal responsibility (e.g. environmental technologies). As such, they represent a major opportunity for the future development of the University.

These strategic research areas, which define BUT's international research profile, also reflect the University's capacity across various Fields of Research and Development (FORD) listed in Tables 5.1.1. and 5.1.2. **However, due to their interdisciplinary nature, they do not fully correspond with individual FORD categories. Therefore these tables have only limited informative value. BUT profiles its research and its future focus through its strategic research areas that, because of their interdisciplinarity, do not correspond to FORD categories.**

Key strategic research areas that BUT intends to develop in the upcoming period include, in particular:

- Semiconductor technologies, especially chips,
- Nanotechnology,
- Automotive technologies (including e-mobility),
- Aerospace technology,
- Electron microscopy,
- Cybersecurity,
- Artificial Intelligence,
- Energy (including nuclear power),

- Energy storage,
- Environmental technologies including renewable energy,
- Technologies for the circular economy,
- Biomedical engineering,
- Advanced materials,
- Architecture,
- Fine arts (especially in connection with technology), artistic research,
- and others.

The **strategic research areas** also encompass specific single-discipline fields developed at the level of individual faculties and university institutes. These areas are often linked to collaboration with industrial or other application-oriented partners (e.g. hospitals, public sector institutions, etc.), where excellent and competitive results are already being achieved. Further development of these areas is expected to strengthen BUT's research excellence and enhance its competitive advantage. (<https://www.vut.cz/en/rad>).

To **coordinate the development of strategic research areas at the university level**, BUT has been gradually appointing **area coordinators** since 2024. Their role is to support interfaculty collaboration and act as contact points for fostering partnerships with external stakeholders. The main responsibilities of the coordinators include:

- collecting and updating information on the current status, capacities, and potential of the strategic area,
- drafting and revising development strategies for the area,
- managing and coordinating professional media communication related to the area,
- facilitating communication with industrial and other external partners,
- contributing to the coordination of research project proposals within their scope,
- supporting the development of study programmes and continuing education for industry professionals, particularly in the form of micro-credentials and, where relevant, more comprehensive qualification-based programmes (e.g. the MSc concept or traditional MBA formats).

Due to the expected complexity of activities, the position of the coordinator is also reflected in BUT Wage Rules and their remuneration system is set accordingly ([Internal Regulation - BUT Wage Rules, Art. 15, paragraph 2](#)). **BUT is the only University in the Czech Republic with such a system for developing strategic research areas.**

The **mission and vision of BUT** are fully aligned with **national strategies and policies**, including the National Economic Strategy, sector-specific strategies (e.g. the National Semiconductor Strategy, State Energy Policy), the National Research, Development and Innovation Policy of the Czech Republic 2021+, the National Knowledge Transfer Reform, the Gender Equality Strategy for 2021–2030, and other national and supranational strategic documents in the field of R&D&I, as listed in Table 5.1.3.

They also reflect the strategic priorities of key funding providers, such as the concept of the National Centres of Competence by the Technology Agency of the Czech Republic, as well as other competence centres focusing on areas of strategic competitiveness (e.g. energy storage).

In this context, BUT continues to **expand its cooperation with industry and application partners**, including through participation in industry association clusters, some of which the University has co-founded (e.g. the Czech Battery Cluster).

The implementation of BUT's mission and vision is guided by a strategic management approach. It is elaborated in the [Strategic Plan of Educational and Creative Activities of the Brno University of Technology for the period 2021+](#) and in the [Implementation Plans](#) updated for each calendar year.

Further measures for the fulfilment of the mission and vision of BUT will be described in the forthcoming Strategic Plan for 2026-2030. Each Implementation Plan includes the **priorities, objectives and expected outcomes, resources (especially financial), and responsibilities for execution**. The Strategic Plan of BUT along with the individual Implementation Plans of the Strategic Plan of BUT is followed by respective strategic plans of the faculties and university institutes, which:

- mandatorily reflect and align with the strategic objectives set by the University and elaborate them in the context of individual faculties and university institutes, and
- contain specific strategic objectives tailored to the particular faculty or university institute.

The effectiveness of the implementation of the Strategic Plan of BUT is regularly evaluated in terms of achieving set objectives and is annually reviewed through so-called **Evaluation visits of BUT management to the faculties and university institutes**.

In connection with the nomination of the new university management in 2022, the university's development **strategy was updated to reflect the fulfilment of its newly formulated mission and vision**. This is captured in the [Implementation Plans](#) for the years 2023, 2024 and 2025. The fulfilment of this mission and vision, including the future direction of BUT, is detailed in the review document published publicly as a separate expanded issue of the internal university journal News at BUT (Události). The document was prepared by the new university leadership in 2024 (i. e. in the middle of its term of office) in form of a Rector's report on the achievements and future direction of the university in both the educational and research areas:

[Rector's report on BUT mid-term management and outlook for the next period](#)

This report details all the measures demonstrating the current implementation of the BUT mission and vision.

Key measures for fulfilling the mission and vision of BUT in the field of R&D&I activities during the past period include the measures, which were implemented based on the Implementation Plans of the Strategic Plan, such as:

1. Setting up additional internal mechanisms beyond the mandatory measures for **Quality Assurance and Assessment** in R&D&I ([see chapter 4.3](#)).
2. Introduction of **Evaluation visits** of BUT leadership to individual faculties to assess the implementation of the faculties' Strategic Plan and its future direction. The evaluation of the Strategic Plan is also linked to the allocation of financial support for the implementation of the faculties' Implementation Plans.
3. Establishment and involvement of the **International Scientific Advisory Board** (ISAB) as an independent advisory body for the quality management of R&D&I, with ISAB's involvement in the evaluation process.
4. Implementation of the concept of excellence development and the creation of the **Excellence Support Fund**.
5. **Two-phase evaluation of R&D&I** held at five-year intervals: benchmarking based on bibliometric indicators followed by independent evaluation of research quality based on peer review, including evaluation of the quality of doctoral programmes.
6. Establishment of **strategic research areas** and creating a concept for their development.
7. Introduction of **new rules for the allocation of financial resources** that the university receives for funding research.

8. Strengthening international collaboration through:

- a. strategic partnerships within the EULIST alliance and selected academic and research institutions,
- b. increased project support in selected areas (ERC, Horizon 2020, Horizon Europe, etc.) and related motivational measures.

9. Newly developed concept for engaging and collaborating with distinguished professors under the “**Visiting Professor**” and “**Extraordinary Professor**” schemes (see [Statute of BUT](#), article 62 and 63).

10. Development of a **personnel strategy** and its consistent implementation ([HR AWARD](#), [Equal Opportunities](#), [Safe University](#), [Social safety](#)).

11. Development and implementation of a concept for **Open Science** and research security, including issues of academic integrity and research ethics issues (see [chapter 4.4](#)).

12. Restructuring of the **knowledge transfer system** to strengthen the protection of intellectual property and improve the efficiency of knowledge transfer.

13. **International evaluation by the European University Association (EUA)** within the Institutional Review Programme ([link to the evaluation report](#)). BUT undergoes this evaluation on a regular basis to obtain an independent report on the alignment of the university's direction, answering the four following questions: “What is it doing?”, “How is it doing it?”, “How does it know (measure) it is doing it?”, and “What is it doing to improve?”.

5.1.1 R&D&I capacities of HEI in the year 2025

Field of Research	FORD	FORD share [%]	Predominant type of research	Total share of field of reaserch [%]
1. Natural Sciences	1.1 Mathematics	3.3%	Basic research	33.1%
	1.2 Computer and information sciences	8.0%	Basic research	
	1.3 Physical sciences	5.8%	Basic research	
	1.4 Chemical sciences	10.6%	Basic research	
	1.5 Earth and related environmental sciences	2.5%	Basic research	
	1.6 Biological sciences	2.8%	Basic research	
	1.7 Other natural sciences	0.2%	Basic research	
2. Engineering and Technology		7.9%	Balanced basic and applied research	61.4%
	2.1 Civil engineering			
	2.2 Electrical engineering, Electronic engineering, Information engineering	14.2%	Balanced basic and applied research	
	2.3 Mechanical engineering	15.3%	Balanced basic and applied research	
	2.4 Chemical engineering	1.6%	Balanced basic and applied research	
	2.5 Materials engineering	10.5%	Balanced basic and applied research	
	2.6 Medical engineering	1.5%	Basic research	

	2.7 Environmental engineering	3.3%	Balanced basic and applied research	
	2.8 Environmental biotechnology	1.4%	Basic research	
	2.9 Industrial biotechnology	1.1%	Basic research	
	2.10 Nanotechnology	2.8%	Basic research	
	2.11 Other engineering and technologies	1.8%	Basic research	
3. Medical and Health Sciences	3.1 Basic medicine	0.6%	Basic research	2.1%
	3.2 Clinical medicine	0.6%	Basic research	
	3.3 Health sciences	0.2%	Basic research	
	3.4 Medical biotechnology	0.5%	Basic research	
	3.5 Other medical sciences	0.1%	Basic research	
4. Agricultural and veterinary sciences	4.1 Agriculture, Forestry, and Fisheries	0.2%	Basic research	0.5%
	4.2 Animal and Dairy science	0.3%	Basic research	
	4.3 Veterinary science	0.1%	Basic research	
	4.4 Agricultural biotechnology	0.0%	Zvolte položku.	
	4.5 Other agricultural sciences	0.0%		
5. Social Sciences	5.1 Psychology and cognitive sciences	0.1%	Basic research	1.7%
	5.2 Economics and Business	1.2%	Basic research	
	5.3 Education	0.1%	Basic research	
	5.4 Sociology	0.0%	Zvolte položku.	
	5.5 Law	0.2%	Applied research	
	5.6 Political science	0.0%	Zvolte položku.	
		0.1%	Balanced basic and applied research	
	5.7 Social and economic geography			
	5.8 Media and communications	0.0%	Zvolte položku.	
	5.9 Other social sciences	0.1%	Basic research	
6. Humanities and the Arts	6.1 History and Archaeology	0.0%	Zvolte položku.	1.2%
	6.2 Languages and Literature	0.3%	Basic research	
	6.3 Philosophy, Ethics and Religion	0.0%	Zvolte položku.	
	6.4 Arts (arts, history of arts, performing arts, music)	0.9%	Basic research	
	6.5 Other Humanities and the Arts	0.1%	Basic research	
Total		100 %	-	100 %

5.1.2 Target R&D&I capacities of HEI for the next five-year period

Field of Research	FORD	FORD share [%]	Predominant type of research	Total share of field of reaserch [%]
1. Natural Sciences	1.1 Mathematics	2.9%	Basic research	32.4%
	1.2 Computer and information sciences	8.0%	Basic research	
	1.3 Physical sciences	5.6%	Basic research	
	1.4 Chemical sciences	10.6%	Basic research	
	1.5 Earth and related environmental sciences	2.5%	Basic research	
	1.6 Biological sciences	2.7%	Basic research	
	1.7 Other natural sciences	0.1%	Basic research	

2. Engineering and Technology	2.1 Civil engineering	7.9%	Balanced basic and applied research	63.0%
	2.2 Electrical engineering, Electronic engineering, Information engineering	14.1%	Balanced basic and applied research	
	2.3 Mechanical engineering	15.0%	Balanced basic and applied research	
	2.4 Chemical engineering	1.6%	Balanced basic and applied research	
	2.5 Materials engineering	11.0%	Balanced basic and applied research	
	2.6 Medical engineering	1.8%	Basic research	
	2.7 Environmental engineering	4.0%	Balanced basic and applied research	
	2.8 Environmental biotechnology	1.7%	Basic research	
	2.9 Industrial biotechnology	1.1%	Basic research	
	2.10 Nanotechnology	3.0%	Basic research	
	2.11 Other engineering and technologies	1.8%	Basic research	
3. Medical and Health Sciences	3.1 Basic medicine	0.5%	Basic research	1.9%
	3.2 Clinical medicine	0.6%	Basic research	
	3.3 Health sciences	0.2%	Basic research	
	3.4 Medical biotechnology	0.5%	Basic research	
	3.5 Other medical sciences	0.1%	Basic research	
4. Agricultural and veterinary sciences	4.1 Agriculture, Forestry, and Fisheries	0.1%	Basic research	0.1%
	4.2 Animal and Dairy science	0.0%		
	4.3 Veterinary science	0.0%		
	4.4 Agricultural biotechnology	0.0%		
	4.5 Other agricultural sciences	0.0%		
5. Social Sciences	5.1 Psychology and cognitive sciences	0.1%	Basic research	1.5%
	5.2 Economics and Business	1.1%	Basic research	
	5.3 Education	0.0%	Basic research	
	5.4 Sociology	0.0%	Zvolte položku.	
	5.5 Law	0.1%	Applied research	
	5.6 Political science	0.0%	Zvolte položku.	
	5.7 Social and economic geography	0.1%	Balanced basic and applied research	
	5.8 Media and communications	0.0%	Zvolte položku.	
	5.9 Other social sciences	0.1%	Basic research	
6. Humanities and the Arts	6.1 History and Archaeology	0.0%	Zvolte položku.	1.1%
	6.2 Languages and Literature	0.1%	Basic research	
	6.3 Philosophy, Ethics and Religion	0.0%	Zvolte položku.	
	6.4 Arts (arts, history of arts, performing arts, music)	0.9%	Basic research	
	6.5 Other Humanities and the Arts	0.1%	Basic research	
Total		100 %	-	100 %

5.1.3 Relation to the strategic objectives of the provider and strategic documents in the field of R&D&I

Strategic document	Follow-up
Strategic Plan of MYES for the Higher Education Sector and Plans for its Implementation https://msmt.gov.cz/vzdelavani/vysoke-skolstvi/strategicky-zamer (in Czech only)	All relevant measures listed in the MYES Strategic Plan has been implemented in the Strategic Plan of BUT 2021+ which has been approved by the Ministry. The implementation of the BUT Strategic Plan is evaluated annually and reported to the Ministry through the Reports of the fulfillment of the Implementation Plan and Annual Reports (https://www.vut.cz/en/board/but-annual-reports).
National Research, Development and Innovation Policy of the Czech Republic 2021+ https://vyzkum.gov.cz/FrontClanek.aspx?idsekce=913172	Reflected explicitly in the Strategic Plan of BUT 2021+. BUT contributes to the fulfillment of four strategic objectives (Objective 2 – Objective 5) formulated in the National R&D&I Policy.
Strategy for education policy of the Czech Republic until 2030+ https://msmt.gov.cz/uploads/brozura_S2030_en_fin_online.pdf	Reflected explicitly in the Strategic Plan of BUT 2021+. BUT focuses on developing competencies for the 21st century, flexible forms of education, and improving access to learning (Objectives 1 and 2).
Innovation Strategy of the Czech Republic 2019–2030 https://vyzkum.gov.cz/FrontClanek.aspx?idsekce=867922	Reflected explicitly in the Strategic Plan of BUT 2021+. BUT aims to become “a platform for setting up successful start-up and spin-off companies” and “a partner in the establishment and development of industrial companies”.
National RIS3 Strategy 2021–2027 https://mpo.gov.cz/assets/en/business/ris3-strategy/2022/1/Annex-3--Monitoring-indicators-and-financing_2.pdf	South Moravian Regional Innovation Strategy 2021–2027 is reflected explicitly in the Strategic Plan of BUT 2021+. BUT places an emphasis on cooperation with the application sector and thus contributes to the development of innovations in the region.
Gender Equality Strategy 2021-2030 https://vlada.gov.cz/assets/ppov/gcfge/Gender-Equality-Strategy-2021-2030.pdf	Reflected in selected objectives of Implementation Plans for the Strategic Plan of BUT 2021+ (especially in the Implementation Plans for 2022 and 2024).
Long-term Plan for Education and Development of the Education System in the Czech Republic https://msmt.gov.cz/vzdelavani/skolstvi-v-cr/dlouhodoby-zamer-cr-2023-2027?lang=1 (in Czech only)	Reflected in the objectives to improve teaching quality, support internationalization, and develop pedagogical competencies of academic staff of the Strategic Plan of BUT 2021+.
European Research Area (ERA)	BUT supports participation in Horizon Europe, research internationalization, open access to research results, and collaboration with the European Research Council (as outlined in Strategic Plan of BUT 2021+ and subsequent Implementation Plans).
European Higher Education Area (EHEA)	Emphasised through the development of international study programmes (joint degrees, double degrees), cotutelle PhD supervision, and the mobility of students and academic staff (as outlined in the Strategic Plan of BUT 2021+ and subsequent Implementation Plans).

5.2 Research and development objectives

The HEI will describe its intentions and goals for the next five-year period. The objectives in the field of research development, innovation, and knowledge transfer as well as the objectives in the field of cooperation with public administration, entrepreneurs, and non-profit organisations will be described in relation to the mission, vision and disciplinary capacities of the HEI. Furthermore, the objectives for the development of the HEI as a research organisation will be described, in the areas of human potential development, institutional resilience, the implementation of open science and adherence to the principles of ethics, scientific integrity, and good practice, and their interrelationship with R&D&I objectives. The objectives described must be consistent with the Strategic plan for the teaching, scholarly, scientific, research, development, artistic and other creative activities of the higher education institution.

Maximum 2000 words.

Self-assessment:

As detailed above, **the fundamental vision of BUT** in the fields of research, development, artistic and creative activities, is to advance knowledge, acquire new insights, explore their practical applications and provide innovative solutions that address global societal challenges; to establish itself internationally as a provider of cutting-edge knowledge and a creator of innovative solutions; and contribute to the development of a knowledge- and innovation-based national economy while collaborating with public and private partners, strengthening its international competitiveness.

In order to develop the mission and fulfil the vision, BUT has defined research and development objectives for the next five-year period in the following areas:

- In the field of **research, development, innovation and knowledge transfer**, the primary objective of BUT is to **strengthen high international competitiveness in selected strategic research areas of basic and applied research**.
- In the area of **cooperation with public administration, entrepreneurs and non-profit organizations**, the primary goal is to **increase the relevance of research towards meeting the R&D&I needs of the application sphere and to address priority societal issues and needs**. This will also lead to an increase in the intensity and volume of knowledge transfer in all its forms.
- In the area of **institutional development of BUT** (e. g. development of human potential, institutional resilience, implementation of open science and adherence to the principles of ethics, scientific integrity and good practice in research, development, innovation and knowledge transfer), the primary objective is to **strengthen the institutional position of BUT as an internationally competitive research university by enhancing institutional stability, efficiency and resilience**.

Note: BUT defines transfer broadly—as the transmission of knowledge not only through R&D&I (in both economic and non-economic contexts), but also through continuing education, expert services, and the arts. In this context, knowledge transfer includes collaborative and contract research, commercialization, licensing, spin-offs and start-ups, as well as consulting and training. BUT emphasizes the practical applicability of both basic and applied research.

These strategic objectives collectively contribute to fulfilling BUT's mission and vision as articulated in its Strategic Plan. While the objectives are presented by thematic area, they represent **a coherent framework guiding the University's R&D&I development**. Their realization is supported by a range of tools and instruments for R&D&I governance and quality assurance. **Specific sub-objectives** and

measurable actions are detailed in the ongoing Implementation Plans and will be further developed in the 2026–2030 Strategic Plan.

To achieve objective 1 – attaining or maintaining high international competitiveness in selected strategic areas of basic and applied research – the following sub-objectives have been defined:

a. Development of Strategic Research Areas (SRA):

- Concentrate capacities across faculties and disciplines; prepare **strategic plans for the development of each SRA** in a competitive international environment.
- Strengthen interfaculty and interdisciplinary collaboration, infrastructure sharing, and links to education (e. g. doctoral schools).
- Institutionalise SRA through the Centres of Competence within the Digital Europe programme (e.g. Czech Semiconductor Centre), the Technology Agency of the Czech Republic programme and cooperation with foreign partners (Czech-Korean Battery Research Centre).
- The establishment and development of at least ten Centres of Competence will **be a measure of success**.

b. Based on the Concept for the Development of Excellence, support Excellent Research Projects:

- Enhance methodological, personnel and financial support for project preparation.
- Increase the number and share of excellent and international research projects.
- The **measure of success** will be:
 - Maintaining at least 5 active ERC projects,
 - Increasing Horizon Europe projects (and similar schemes) by 30%,
 - Raising the share of EU framework programme projects from 5% to 8% of R&D revenues (especially in ERC, ERC CZ, GAČR Expro, Teaming, Junior Star, MSCA, Horizon Europe etc).

c. Sharing of Research Infrastructure:

- Expand access to infrastructure across disciplines and for international partners, especially within the EULIST European University Alliance.
- The **measure of success** will be at least doubling the number of instruments and infrastructure in the sharing system and extending it to EULIST partners.

d. Renewal and Sustainability of Critical Infrastructure:

- Maintain the competitiveness and state-of-the-art status of key research infrastructure in the strategic research areas of BUT.
- Introduce an internal model for systematic renewal based on depreciation and equipment lifespan.
- Following major infrastructure investments in 2010–2020, **the measure of success** will be maintaining sustainable depreciation levels and equipment renewal cycles.

e. Evaluation Success (Methodology for Higher Education Institutions 2025+):

- The **measure of success** will be:
 - Achieve an overall grade of “A”, leading to improved institutional research funding enabling the funding of research development goals.
 - Reach at least 75% of publications in Q1 and Q2 journals, excluding MDPI and predatory publishers.
 - Attain an M1 module score with a minimum of 2.5 and target average of 1.8.

The objective 2 - to increase the relevance of research towards meeting the R&D&I needs of the application sphere and addressing priority societal issues and needs - will be achieved through the **development of the knowledge transfer system at BUT** and the fulfilment of the following sub-objectives:

- a. Increase the quality and relevance of applied research by placing greater focus on collaboration with strategic industrial partners and intensive use of BUT Industry Council as an advisory body in the area of commercialization of results.
 - Pursue long-term research contracts with industrial partners in strategic areas.
 - **The aim is to** achieve a minimum of 3 contracts of systematic collaboration in the strategic areas with relevant partners.
 - To develop and support (methodologically, financially) the identification and verification of results at the POC (Proof of Concept) stage in cooperation with BUT Industry Council and the [South Moravian Innovation Centre \(JIC\)](#).
 - **The aim is to** establish the position of technology scouts at selected faculties and to support Proof of Concept projects, with a minimum of at least 50 projects.
 - Based on effective collaboration, develop knowledge transfer and effective cooperation within the §28-31 of the Community Framework for State Aid for Research, Development and Innovation (non-economic cooperation) with industrial partners.
 - **The aim is to** double the revenue from non-economic transfer (sales of results, licenses, etc.), i. e., increase from the current 20 million CZK (2024) to 40 million CZK /year within 5 years (until 2030).
 - Focus the contract research on strategic collaboration, reducing the number of contract research projects while increasing funding.
 - **The aim is to** increase the volume of contract research by 30% over 5 years, prioritising strategic research areas.
- b. Based on the new law and the updated concept for the development of the knowledge transfer system, revise and simplify the internal regulations in the area of knowledge transfer, and upgrade the information system for knowledge transfer.
 - **The aim is to** revise all internal regulations related to knowledge transfer by the end of 2026 and strengthen and expand the information system for knowledge transfer, including the intellectual property management.
- c. Build and implement a comprehensive training system for PhD students and BUT researchers in all relevant areas of knowledge transfer within the Continuing Education and Counselling Centre of BUT.
 - **The aim is to** introduce systematic training (regular courses) for all PhD students and researchers at BUT by 2026. The details will be provided in a concept developed by the end of 2025.
- d. Develop international collaboration in the area of setting up knowledge transfer to increase the involvement of innovation actors, developing entrepreneurial competences at universities and improving the connection between research and market needs.
 - **The aim is to** establish and develop collaboration with strategic partners in this area (in particular TU Wien, STU Bratislava and EULIST partners), supported by a project within the European Innovation Ecosystems call (HORIZON-EIE-2024-CONNECT-02), and to achieve the objectives specified in the project and within EULIST.

- e. In cooperation with the [South Moravian Innovation Centre \(JIC\)](#), develop a system of support for the establishment and development of start-up and spin-off companies, simplify the process of establishing and developing start-up and spin-off companies, participate in the creation and activities of a venture fund to support spin-off companies.
 - **The aim is to** establish at least 40 start-up and spin-off companies within 5 years (by 2030).
- f. Support and develop the innovation and entrepreneurial ecosystem at BUT to promote entrepreneurship among BUT students and employees (contriBUTe).
 - **The aim is to** double the involvement of students and staff in the activities overseen by this system.

The fulfilment of objective 3 - strengthening the position of BUT as an internationally competitive research university by increasing institutional stability, efficiency and resilience – will be ensured by the following sub-objectives:

- a. Develop an efficient collaboration and utilize the potential of the International Scientific Advisory Board (ISAB) in the field of institutional assurance and quality assurance of the R&D&I.
 - **The aim is to** hold regular (annual) meetings of the ISAB focused on specific areas of R&D&I management (e. g. research quality assurance system, research security, etc.) and to implement the outcomes of the meetings into internal regulations, and
 - to conduct at least one comprehensive evaluation of research at BUT (similar to the evaluation held in 2024) by 2029.
- b. Strengthen the expertise, personnel, financial, infrastructural and other capacities (e. g., education in relevant areas) for the development and assurance of research, both at the central level and at the level of individual faculties and institutes:
 - Capacities will be strengthened both on an institutional basis (support from institutional funding) and on a project basis using targeted project funding. **The aim is to:**
 - Increase institutional (normative) research funding by 30% (LC ROD - Long-term Conceptual Development of a Research Organization) from current 560 million CZK to at least 800 million CZK by 2030.
 - In targeted projects and contractual research entering the M3 module, to achieve at least the level of normative funding, i. e. 800 million CZK, in 2030 (excluding partner shares in projects where the University acts as the principal investigator).
 - Increase the share of targeted project funding from current 35% to 40%, which will allow further development of research assurance in these areas.
- c. Stabilize and develop human resources for individual strategic research areas, particularly:
 - consistent implementation of HR AWARD policies and related HR measures,
 - endeavour for age and gender balance,
 - enhancing involvement of foreign researchers,
 - improving gender balance in research,
 - developing measures to support work-life balance and reconciliation of family and work life.

- **The aim** is to further develop a harmonious, open and non-discriminatory working environment that takes into account needs of all groups of employees, including individual needs and reconciliation of family and work life.
- d. In the context of the reform of doctoral studies, develop doctoral programmes, in particular:
 - optimise financial and study conditions of doctoral students,
 - support the establishment and development of doctoral schools,
 - in cooperation with industrial partners, develop the system of industrial doctorates.
 - **The aim is to** increase the completion rate of PhD studies from the current 25% to 50%, link PhD studies with practice and facilitate their implementation (elimination of administrative obstacles) in cooperation with industrial and other partners (e. g. the Czech Academy of Sciences), including the expansion of the concept of industrial doctorates.
- e. Ensure the openness of the University and transparency of scientific research, artistic and other creative activities while ensuring research security with a focus on:
 - creating a balance between openness in the academic environment and security,
 - strengthening the intellectual property protection system;
 - ensuring research security (classification of sensitive research areas and sensitive data etc.)
 - preventing illegitimate influence,
 - ensuring information and cybersecurity.
 - **The aim is to** guarantee the University's openness while ensuring its competitiveness in terms of protection of intellectual property and know-how, and ensuring research security.
- f. Increase the relevance and efficiency in project activities, particularly:
 - revise the information support system for project management,
 - prepare a new information system for the support and implementation of project activities, including the evidence of project results,
 - introduce a system for monitoring (anticipated) application of applied research results.
 - **The aim is to** increase the efficiency of project management and prioritize strategic projects.

5.3 Institutional tools and measures for the implementation of the research and development strategy

The HEI will describe its institutional and strategic tools (e.g., strategic management tools, tools created to support the implementation of research objectives, legal and organisational norms in relation to R&D&I support, etc.) that are designed to fulfil the research and development objectives for the next five-year period (Table 5.3.1), with an emphasis on:

- Supporting quality R&D&I.
- Excellent science.
- Innovative environment and increasing the international or disciplinary competitiveness of the HEI's research activities.
- Development of human potential.
- Institutional resilience.
- Adherence to ethical principles, scientific integrity and good practice in R&D&I.

Maximum 2000 words.

Self-assessment:

To meet its research and development goals, BUT will continue to build on and refine its institutional and strategic instruments over the next five years. These tools, introduced in the previous period and described in Module 4, focus on:

- **managing R&D&I to improve quality,**
- **evaluating the quality of R&D&I processes and outcomes,**
- **supporting and motivating all R&D&I participants at BUT, and**
- **using MEYS-funded programmes** (such as the Strategic Management Support Programme and the Area Development Support Programme) or their future equivalents **to support strategic development.**

Specific examples are provided below. In response to anticipated developments in the research landscape, BUT will also introduce **new tools and measures**. Key upcoming changes include the revised Methodology for Evaluation in the Higher Education Segment (expected from 2025), a new Act on the Support of Research and Development from Public Funds, updates to R&D&I funding, and the MEYS Strategic Plan for 2026–2030. BUT will also respond to the evolving needs of society, its industrial partners, and developments in the international research environment.

The tools mentioned (see Table 5.3.1) are described in detail below and grouped into categories based on the terms of reference.

• Supporting quality R&D&I

To foster excellence in R&D&I and maintain quality across all relevant processes and outputs, the University has adopted a set of tools and measures, detailed primarily in [chapter 4.3](#). Key examples include:

a) Internal Evaluation Board BUT

A fundamental measure determined by law, is the internal evaluation of the quality of BUT, which is ensured by the [Internal Evaluation Board of BUT](#), and governed by the [Rules of the Quality Assurance System and Internal Quality Evaluation of BUT - Rules of Procedure of the](#)

Internal Evaluation Board of BUT. The quality assurance is evaluated annually in the Report on Quality Assurance and Internal Evaluation of BUT.

b) International Scientific Advisory Board of BUT (ISAB)

BUT will continue to strengthen its collaboration with ISAB, particularly in the areas of institutional assurance and R&D&I quality assurance. ISAB will also play an active role in the evaluation of R&D&I quality.

c) Two-phase internal evaluation of research quality at BUT

The two-phase internal evaluation of research quality at BUT (see [chapter 4.3](#)) is an integral part of the University's quality assessment system and is conducted on a five-year cycle. The first phase, focusing on bibliometric indicators and benchmarking BUT against selected criteria, is scheduled for 2027. This will be followed by an in-depth peer review involving international evaluators.

d) Evaluation of BUT within the Institutional Evaluation Programme (IEP) of the European University Association (EUA).

As in previous periods, BUT plans to participate in the Institutional Evaluation Programme (IEP) of the European University Association (EUA), planned for 2027.

• Excellent science

BUT will further develop the measures for excellent science support, **described in detail in [chapter 4.2](#) and anchored in the Concept of Excellence Support at BUT** available at <https://www.vut.cz/en/rad> :

e) [Research Excellence Fund](#)

is a unique institutional tool at BUT, with no direct equivalent at other Czech universities. Its purpose is to support the preparation and implementation of outstanding grant projects, such as international ERC, MSCA, and Dioscuri grants, as well as national schemes like ERC-CZ, Czech Science Foundation (GA CR) EXPRO, and Junior Star.

The fund is financed annually from institutional support and can be used to:

- motivate and support the preparation of excellent grant proposals,
- stabilize top-performing research teams at BUT,
- support the implementation of selected high-impact projects.

f) Support for international cooperation with excellent foreign research organisations

BUT will continue to foster new collaborations with top international research institutions and scientists through both incoming and outgoing mobility. Sufficient funding will be allocated within the **BUT Scholarship and Partnership Programme for Excellence**, supporting the exchange of excellent researchers and students (see also [chapter 4.8](#)).

To further promote excellent science, additional tools outlined in the Concept of Excellence Support will be applied, including:

- systematic methodological support for preparing excellent project proposals,
- mechanisms for identifying and evaluating research excellence,
- emphasis on excellence when distributing institutional research funding across faculties and institutes (see also [chapter 4.11](#)),
- support for building strong research teams within CEITEC BUT and other units,

- the development and provision of high-quality research infrastructure.

Additional tools and measures for the 2026–2030 period that are currently under preparation are listed below.

- **Innovative environment and increasing the international or disciplinary competitiveness of the HEI's research activities**

Most of the institutional tools and measures mentioned above clearly lead to the development of an innovative environment and increasing the international or sectoral competitiveness of BUT research activities. Other measures that will be implemented include:

g) Developing institutional facilities to support excellence

A **personnel development programme** is being prepared for project support teams at the Rectorate and selected faculties, along with enhanced methodological and administrative support for the preparation and implementation of excellent R&D&I projects. These efforts aim to strengthen international cooperation, particularly within the ERA framework.

Other planned measures include **improving the efficiency of academic performance assessment** within the internal evaluation system and better integrating this system with continuous professional development, reward mechanisms, and strategic HR planning. This will be implemented through the internal System for the Evaluation of Academic and Research Staff (SHAP).

h) Supporting successful research teams

Starting in 2026, BUT will apply for the **“Excellence” programme** launched by the MEYS. The programme aims to support Czech research teams that have succeeded in EU framework programmes, European partnerships, or similar international R&D&I grant schemes. The support will help maintain and further develop these teams after the conclusion of their international projects.

i) Development of interdisciplinary and interfaculty cooperation in BUT strategic areas

BUT will continue to **foster interdisciplinary and interfaculty collaboration in its strategic research areas**, as outlined in sections 5.1 and 5.2. For each area, a Strategic Development Plan will be created or updated in 2025. Progress toward these objectives will be evaluated in 2027 or 2028. The Concept for the Development of Strategic Areas will also be revised, potentially leading to the introduction of new areas or the adjustment or consolidation of existing ones.

- **Development of human potential**

The development of human potential is the primary priority of BUT, anchored directly in the [Statute of BUT](#) (page 2): *“At all levels of its activities, it is a university of equal opportunities and equal access, which understands its academic, research and other non-academic staff as an essential source of its wealth and competitive advantage and students as an equal part of the academic community and the most valuable community, whose quality education and development will always be the central motive and primary attention in fulfilling its mission.”*

BUT is therefore developing a range of internal tools for human potential development which are described in detail within the Module 4 report, particularly in sections 4.6 and 4.7. Among the key tools in this area belong:

j) BUT Career Rules (Guideline no. 15/2024) – internal regulation

The BUT Career Rules set out the principles of career development of employees, specify the conditions and motivational elements for career growth, and regulate the basic conditions for filling positions for academic and research staff as well as employee evaluations. The Rules define four basic career paths: academic, scientific-research, technical-economic and manual, with career progression possible both horizontally (changing career paths) and vertically (progression within the same career path). Article 9 of the Career Rules defines the tools available for career development: education, participation in conferences and professional events, sabbaticals, internships abroad, adjustment of working conditions, adjustment of time limits for recognised parental leave, remote work, and mentoring of new employees. Specific needs related to disciplines may be defined by individual faculties in their internal regulations.

k) Action plan (HR Excellence in Research)

In connection with the HR Excellence in Research Award ("HR Award"), BUT has prepared a [GAP analysis](#) reflecting the current state of implementation of the principles of the Charter and the Code and the principles of the OTM-R policy in 2023 (see [analysis of OTM-R policy in university](#)). Based on these analyses, an [Action Plan \(AP\)](#) has been prepared, which serves as a foundation for the implementation and development of the HR policy at BUT.

As detailed in Module 4, the BUT possesses and will continue to develop a range of additional tools and measures for the development of human potential, which can be summarised into the following areas that the University systematically develops:

- **Training and professional development:** investment in continuing education, training and skills development for researchers and support staff. It is provided by the Continuing Education and Counselling Centre and supported by a number of projects that the University has been implementing in this area.
- **International cooperation to improve staff competences:** support for mobility, exchanges and international projects that allow the transfer of knowledge and experience. Described in detail in [chapter 4.8](#).
- **Strengthening the motivational conditions for attracting talent:** BUT implements and participates in strategic programmes and projects aimed at attracting and retaining top scientists and young talent, e. g. the [Brno PhD Talent](#) programme.
- **Strengthening the number of researchers in the PostDoc category** (excluding PhD graduates at the University).

• Institutional resilience

Key tools in this area include:

(I) Manual for Preventing Undue Influence

In order to increase institutional resilience, BUT will continue to develop the measures detailed in chapter 4.4:

- updating the **quality management system** for research, artistic and other creative activities, with emphasis on research security, in 2025,
- regular updating of Manual for Preventing Undue Influence,
- updating measures, guidelines and methodologies (see [chapter 4.4](#)) in the area of **intellectual property protection and knowledge transfer**,

- regular updating of the [Open Science Strategy at BUT for 2022-2025](#); the currently forthcoming update will significantly strengthen aspects of the intellectual property protection and the protection of sensitive research data; regular seminars and training for our staff and students,
- regular institutional resilience **training for all staff**, with content reflecting the position held, and in-depth training for incoming staff,
- improving technical and technological measures, such as the introduction of multi-factor authentication for all users.

BUT will continue to develop institutional resilience in the international context, primarily within the international networks and alliances of which the University is a member. BUT regularly participates in meetings and working groups of:

- university alliance EULIST - European University (<https://eulist.university/>), which BUT currently chairs,
- European University Association, or
- CESAER network of technical and research universities (approximately 50 invited member universities),
- network of cooperating European technical universities (approximately 40 loosely affiliated universities, currently coordinated by TU Graz).

At the national level, the issue will be subsequently addressed in coordination with the Ministry of Interior, other universities and on various official and unofficial platforms such as the working group on Digitization and Cybersecurity established at the MEYS.

• **Adherence to ethical principles, scientific integrity and good practice in R&D&I**

To uphold ethical principles, scientific integrity and good research practice, BUT applies several instruments, partly described mainly in [chapter 4.3](#):

m) [BUT Code of Conduct](#)

BUT has adopted and consistently applies its Code of Conduct, based on the European Charter for Researchers. Compliance is overseen by the Ethics Committee of BUT.

n) [Ethics Committee](#)

The Ethics Committee monitors adherence to the Code of Conduct and handles related complaints. It also provides consultations to the academic community on ethical matters and promotes awareness of the University's core values and standards.

In response to the expected amendment to the Act on the Support of Research and Development from Public Funds, which will place greater emphasis on institutional ethics, BUT is preparing the following measures:

o) Expansion of professional ethics committees

Currently, the [Ethics Committee for Biomedical Research at FEEC](#) evaluates research involving humans, human biological material, experimental animals, or genetically modified organisms. Although based at FEEC, it provides assessments for relevant projects across BUT.

In light of upcoming legislation, BUT is establishing a new ethics committee focused on artificial intelligence (AI) research, with full implementation expected by 2025. The University is also prepared to set up additional committees if further legislative changes require them.

5.3.1 Institutional tools and measures for the implementation of the research and development strategy

Name of instrument/measure	Description of the tool/measure	Implementation status	Year
a) Internal Evaluation Board BUT	A key measure ensuring the high-quality of R&D&I activities of the BUT. https://www.vut.cz/en/but/structure/internal-evaluation-board	Implemented	1998
b) International Scientific Advisory Board of BUT (ISAB)	An independent advisory body in the field of University's strategic development and improvement of the quality of scientific, development, innovation, and educational activities. https://www.vut.cz/en/rad/international-scientific-advisory-board	Implemented	2023
c) Two-phase internal evaluation of research quality at BUT	A two-phase internal evaluation of research quality at the BUT conducted by international experts, that is a part of the quality assurance system and will be organized with a 5-year periodicity.	Implemented	2023
d) Evaluation of BUT within the Institutional Evaluation Programme (IEP) of the European University Association (EUA)	Independent evaluation by international experts which serves as a relevant basis for the BUT management to systematically improve the quality of activities and the long-term development strategies, carried by EUA. https://www.vut.cz/en/board/internal-quality-evaluation	Implemented	2004
e) Research Excellence Support Fund	A unique fund supporting the submission of applications and subsequent implementation of excellent grant projects, created from the institutional support for the long-term conceptual development of the research organisation (LCDRO) in the amount according to the approved budget rules. https://www.vut.cz/en/board/internal-legislation-but/-d265714/uplne-zneni-rozhodnuti-9-24-fond-excelence-en-p290910 https://www.vut.cz/en/rad	Implemented	2024
f) Support for international cooperation with excellent foreign research organisations	e.g. Scholarship and Partnership Programme for Excellence and support for the departures and arrivals of excellent researchers and excellent students	Implemented	2022

g) Developing institutional facilities to support excellence	A personnel development program for project support Enhancement of the academic staff evaluation system	Not-implemented	2025
h) Supporting successful research teams	Participation in the "Excellence" programme prepared by the Ministry of Education, Youth and Sports, starting from 2026.	Not-implemented	2026
i) Development of interdisciplinary and interfaculty cooperation in the BUT strategic areas	Development of strategic research areas responding to current societal challenges and contributing to a sustainable future, strengthening the international position of BUT. https://www.vut.cz/en/rad	Implemented partially	2024
j) BUT Career Rules (Guideline no. 15/2024) – internal regulation	Internal regulation providing fundamental principles of career development of employees of the BUT.	Implemented	2024
k) Action plan (HR Excellence in Research)	The foundation of an HRS4R management, presenting the institution's strategic vision in terms of the priority areas and implementation steps to be undertaken in the next two years. https://www.vut.cz/en/but/hr-award#action-plan	Implemented	2020
l) Manual for Preventing Undue Influence	a guiding document designed to protect institutional decision-making from inappropriate external pressure, safeguard academic integrity, and promote transparency.	Implemented partially	2025
m) BUT Code of Conduct	A morally binding measure following the basic rights and obligations of employees in the concluded employment contract or agreements on work. https://www.vut.cz/en/board/internal-legislation-but/-d233109	Implemented	2022
n) Ethics Committee	An advisory body established by the Rector for the purpose of reviewing complaints regarding compliance with the BUT Code of Conduct and offences against it. https://www.vut.cz/en/but/structure/ethics-committee	Implemented	2015
o) Expansion of professional ethics committees	Establishment of additional ethics committees in response to the expansion or modifications of the legislation.	Implemented partially	2025

5.4 Implementation of the recommendations in Module 5

The HEI will briefly describe how it has implemented the recommendations for Module 5 from the previous evaluation period, if applicable.

Maximum 1000 words

Self-assessment:

General Recommendations for Module 5:

The BUT vision covers all that one would expect of a leading university. However, the vision could be much more forcibly stated. BUT's future strategy is based largely on what has been done before. More clarity is needed to say how the strategy might be achieved and what measures will be put in place to measure success. It would be useful for each Faculty to have its own strategy document which then fit within a coherent overall BUT strategy. Processes need to be put in place to help develop these strategies. Once in place they should play a key role in ensuring BUT remains a world-leading university with a high quality, strongly motivated staff.

The new [Statute of BUT](#) clearly defines the university's vision as well as specific visions for four key areas:

1. Education
2. Research, development, artistic, and creative activities
3. Social role
4. Governance and internal administration

The Statute also establishes a clear framework for **strategic management at BUT**. BUT operates based on a strategic approach that ensures its long-term development and competitiveness in higher education, teaching, and creative activities. The university issues the **BUT Strategic Plan**, a key document that defines the main directions of its development. Plan is approved by the Academic Senate of BUT and the Board of Trustees of BUT and represents the University's commitment to its long-term objectives. It is typically formulated for a five-year period.

Based on the Strategic Plan, [Annual Implementation Plans](#) are developed and approved each year. These plans specify concrete goals and measures necessary to achieve BUT's strategic objectives. Each Implementation Plan includes a **definition of priorities, goals, expected outcomes, resources, and responsibilities for execution**. The effectiveness of the Strategic Plan's implementation is regularly assessed in terms of achieving the defined objectives.

The Strategic Plan and its Annual Implementation Plans serve as a framework for the **strategic plans of BUT's faculties and research institutes**. These plans must align with the University's overarching strategic goals and further develop them in the context of individual faculties and research institutes and include their own specific strategic objectives tailored to the needs and focus of each faculty or research institute.

5.1 Internationalization of the university should play a key role in the strategy. Professional societies with high impact potential should be considered.

Measures taken in the field of internationalization are described in **Module 4**, particularly in [Chapters 4.6 and 4.8](#).

For the year **2025**, the following priorities have been established in the field of internationalization (Impact of professional societies is considered in priority 1.11.):

Priorities in the Field of Education:

1.9 Internationalization of the Internal Environment

1.10 Mobility of Students and Staff at BUT

1.11 Membership of BUT, Faculties, and Research Institutes in International Associations, Networks, Conference Program Committees, and International Institutions

1.13 Development of Education Marketing

Priority in the Field of Creative Activities:

2.3 International Dimension of Research Activities at BUT

For more details, see the [Implementation Plan of the BUT Strategic Plan for 2025](#).

5.2 *The strategy could be more clearly defined with some desirable goals clearly specified so that future success could be measured against these. The mechanisms for achieving the goals should also be specified more clearly.*

See the answer to the overall recommendations for Module 5 above.

5.3 + 5.4 *Management tools should also be put in place to support staff who are under achieving, rather than only motivating those who are already highly achieving.*

Mentoring and guidance tools are described below (point 5.5). Other systemic incentive measures/tools to support quality R&D&I are described in [chapter 4.2](#).

5.5 *Creating conditions for more attractive careers is a laudable goal, but this should include (1) the possibility of internal promotion without having to wait for a position to become vacant and then have to compete with a wide range of internal and external candidates (2) Encouragement of more women to adopt this as a “career of choice” by ensuring they are not unduly disadvantaged by their work-life choices (3) Providing mentoring and guidance for those staff who are currently under performing, so they regain their motivation. (4) At least 3 spin-off companies in a year is a laudable goal, but a lot more will need to be done in order to foster an entrepreneurial spirit at BUT.*

- 1) Career development rules and legislation related to the recruitment and career development of domestic and foreign employees are described in [chapter 4.6](#).
- 2) Gender equality measures are described in [chapter 4.7](#).
- 3) At BUT, mentoring and guidance are key tools in supporting employees who may be underperforming, helping them regain motivation and improve their professional engagement. The details are described in chapter 4.2.
- 4) Measures taken in order to foster an entrepreneurial spirit at BUT are described in [chapter 4.13](#).

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 5

Document name	No. criteria	Location (link in HTML)
Code of Conduct	5.3.	https://www.vut.cz/en/board/internal-legislation-but/-d233109
Ethics Committee BUT	5.3.	https://www.vut.cz/en/but/structure/ethics-committee
EUA Evaluation Report	5.1.	https://www.vut.cz/uredni-deska/hodnoceni-kvality/eua-evaluation-report-2023-p236747
HR Award at BUT	5.1.; 5.3.	https://www.vut.cz/en/but/employee-support/hr-award
Internal Evaluation Board	5.3.	https://www.vut.cz/en/but/structure/internal-evaluation-board
News at BUT	5.1.	https://www.vut.cz/vutium/archiv/udalosti-na-vut-3-2023-2024-en-p272294
Open Science Strategy at the BUT for the period 2022-2025	5.3.	https://www.vut.cz/en/rad/results/strategie-open-science-na-vut-2024-25-final-en-pdf-p262577
Quality Management and Evaluation	5.3.	https://www.vut.cz/en/board/internal-quality-evaluation
Rules of Procedure of the Internal Evaluation Board of BUT	5.3.	https://www.vut.cz/en/board/internal-legislation-but/rules-of-procedure-of-the-internal-evaluation-board-of-but-d143508
Science and Research at BUT	5.1.	https://www.vut.cz/en/rad
Social Safety at BUT	5.1.	https://www.vut.cz/en/but/employee-support/social-safety
Statute of BUT	5.1.	https://www.vut.cz/en/board/internal-legislation-but/internal-regulation-statute-of-but-d260207
Strategic Plan of BUT for 2021+	5.1.	https://www.vut.cz/en/board/strategic-plans/strategic-plans-f127629/strategic-plan-of-but-for-2021-d237093
Wage Rules	5.1.	https://www.vut.cz/en/board/internal-legislation-but/-d203925