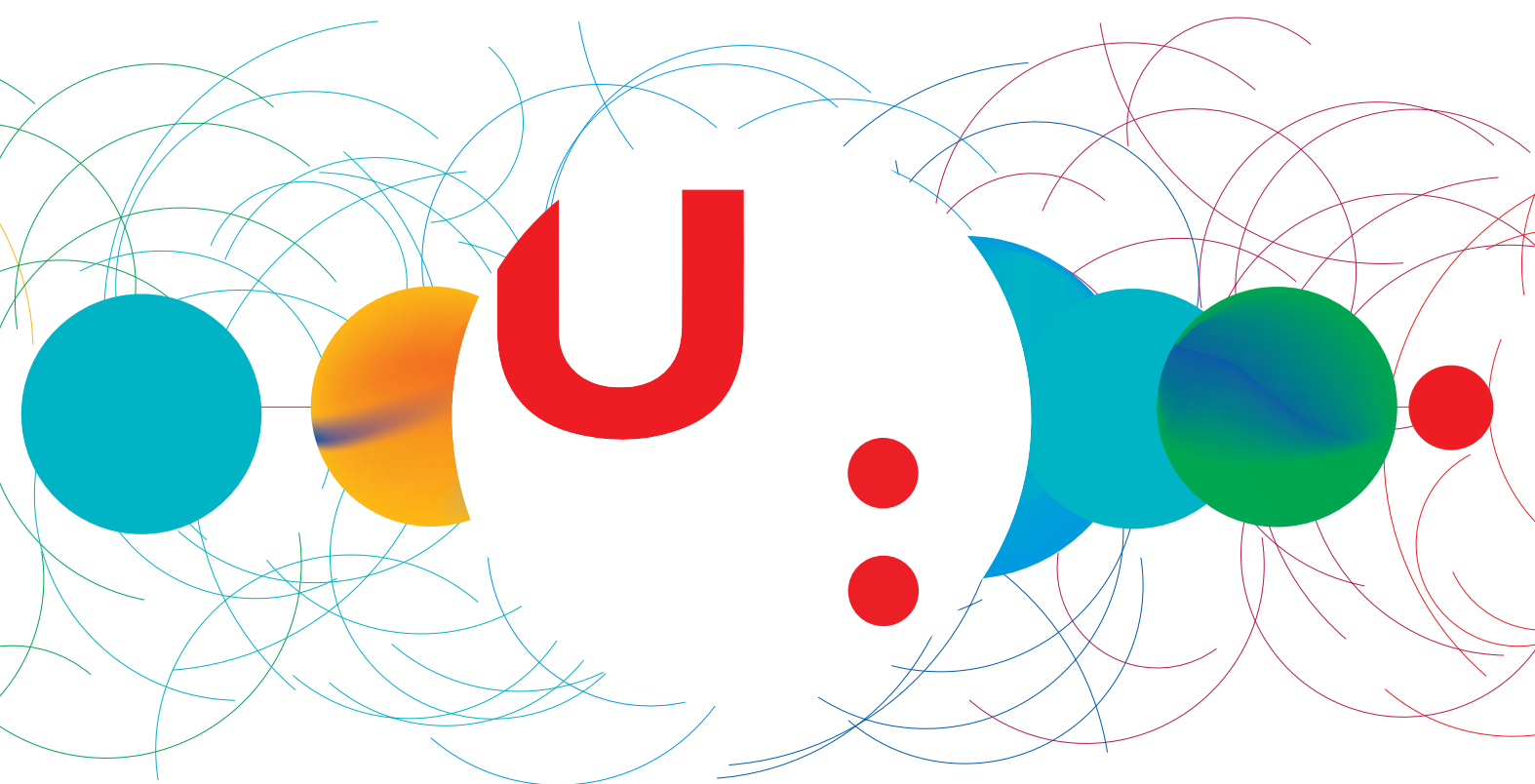




UNIVERSITY OF PARDUBICE
SELF-EVALUATION REPORT
2025

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



**UNIVERSITY
OF PARDUBICE**



**MINISTRY OF EDUCATION,
YOUTH AND SPORTS**

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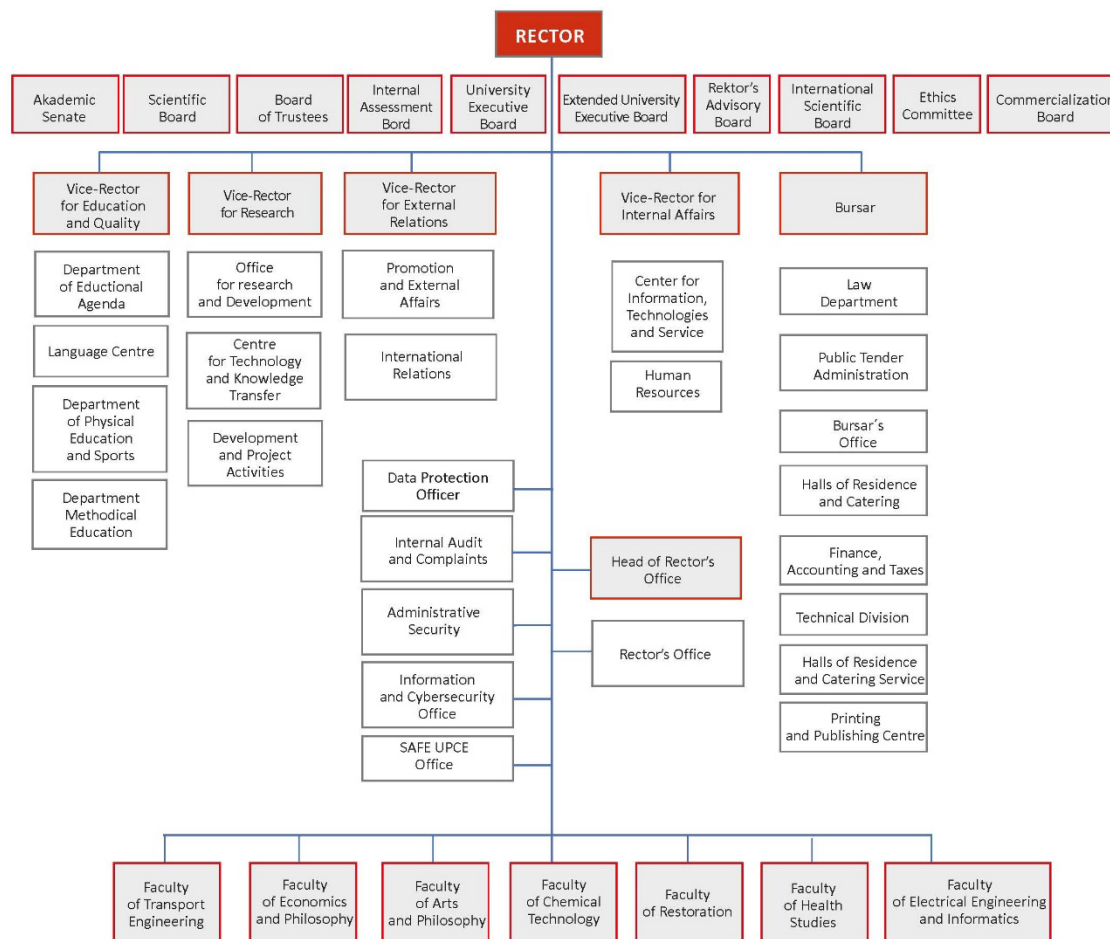
HIGHER EDUCATION INSTITUTION NAME: UNIVERSITY OF PARDUBICE

COMPANY REGISTRATION NUMBER (CRN): 00216275

THE LIST OF EVALUATION UNITS IN MODULE 3:

- **FACULTY OF ARTS AND PHILOSOPHY (FAP)**
 - **FACULTY OF CHEMICAL TECHNOLOGY (FChT)**
 - **FACULTY OF ECONOMICS AND ADMINISTRATION (FEA)**
 - **FACULTY OF ELECTRICAL ENGINEERING AND INFORMATICS (FEEI)**
 - **FACULTY OF HEALTH STUDIES (FHS)**
 - **FACULTY OF RESTORATION (FR)**
 - **FACULTY OF TRANSPORT ENGINEERING (FTE)**
-

ORGANIZATIONAL STRUCTURE OF THE HIGHER EDUCATION INSTITUTION



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

THE HIGHER EDUCATION INSTITUTION CONTACT PERSON

Name and surname: Veronika Kolínová

Position: Secretary of IEP

Phone number: +420 466 036 536

E-mail: veronika.kolinova@upce.cz

prof. Ing. Libor Čapek, Ph.D.
Čapek, Ph.D.

Digitálně podepsal prof.

Ing. Libor Čapek, Ph.D.

Datum: 2025.05.06

08:58:50 +02'00'

prof. Ing. Libor Čapek, Ph.D.

Rector of the University of Pardubice

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:

The **University of Pardubice (UPCE)** was established in 1950 as the College of Chemistry, originally aimed at training experts in technical chemistry to support the rapidly expanding chemical industry in Eastern Bohemia – with Pardubice being one of the most significant centres of the chemical industry in Central Europe. Following the political and economic transformations of the 1990s, the institution evolved into a multidisciplinary university by establishing new faculties. Today, UPCE offers a broad spectrum of bachelor's, master's, and doctoral degree programmes across seven faculties, covering disciplines in **natural sciences, engineering, social sciences and humanities, economics, arts, and health sciences.**

At UPCE, we are committed to excellence in **science and research.** The University consistently ranks among the **top ten Czech universities** in terms of citations and research output. Our faculties and students actively engage in both basic and applied research, regularly publishing in internationally recognised journals and establishing a strong reputation both nationally and globally.

UPCE fosters a highly international environment, participating in numerous **international projects and research collaborations.** We have established partnerships with **over 400 institutions across 50 countries,** engaging in student and faculty mobility, as well as co-organising international conferences, professional symposia, and academic seminars.

Beyond academia, UPCE is committed to **public engagement and science outreach.** The University organises science festivals, school outreach programmes, sports events, and children's educational initiatives, including a Children's University and day camps featuring scientific experiments. We actively encourage young talents to explore the world of modern science.

As an **internationally recognised centre of education and research,** UPCE contributes to scientific progress, technological innovation, and societal development, while fostering human creativity and improving quality of life. With a stable financial position, a strong internal culture, and a commitment to academic values and traditions, UPCE is one of 26 public universities in the Czech Republic, established by law. With approximately 7,000 students, it is a mid-sized public university.

The University's ability to meet key performance indicators is underpinned by **national and international research, development, and innovation projects.** These include funding from national bodies such as the Czech Science Foundation (GA ČR), the Technology Agency of the Czech Republic (TA ČR), and other governmental programmes. UPCE is also involved in major European research initiatives, including ERC, COST, and Horizon 2020, as well as projects supported by EU Structural Funds' Operational Programmes, the National Recovery Plan, various centralised development projects, and activities funded by the Programme for Supporting Strategic Management of Universities.

While each faculty maintains a distinct scientific focus, they share a commitment to **socially relevant research.** This shared vision is reflected in all major strategic documents and informs University governance, which operates through a collegial decision-making process involving the Deans of all faculties.

SWOT ANALYSIS

Strengths 1. Multidisciplinary focus in education and R&D&I. 2. High-quality education across multiple disciplines, supported by strong personnel resources. 3. State-of-the-art infrastructure for educational activities and research disciplines. 4. Long-standing relationships with industry, particularly in technical faculties. 5. Specialisation in unique fields of education and R&D&I. 6. Participation in ERC, ERC-CZ, and other international collaboration projects. 7. Focus on addressing socially significant challenges. 8. Broad network of international partner institutions with established long-term collaborations. 9. Engagement in international academic and research networks.	Weaknesses 1. High-quality and excellent outcomes in education and R&D&I limited to a narrow range of disciplines, with participation from a relatively small number of staff members. 2. Low number of high-impact publications in top-tier journals such as Nature and Science. 3. High degree of academic inbreeding. 4. Imbalance in the academic staff structure across faculties and slow progress in improving age and qualification demographics. 5. Disproportionate pricing of short-term and long-term accommodation (without additional services). 6. Limited availability of information in English about the University of Pardubice (e.g. for new arrivals to the city, social media presence, etc.). 7. Uneven levels of English language proficiency across staff members.
Opportunities 1. Participation in educational and research projects funded by international providers. 2. Stabilisation of institutional funding from national funding bodies. 3. Strengthening collaboration with industry and commercialisation of research outcomes. 4. Development of strategic partnerships with leading international universities, provided the collaboration is mutually beneficial. 5. Existence of high-quality international institutions interested in cooperation. 6. Growing interest of international students in studying in the Czech Republic. 7. Relatively low cost of living in the Czech Republic.	Threats 1. Decreasing interest in doctoral study programmes. 2. Declining academic preparedness and skills of students entering higher education. 3. Limited willingness of highly qualified experts and international professionals from economically strong countries to work in Czech universities due to uncompetitive salary levels (except for selected project-based positions). 4. Reduction in targeted funding from both national and international sources. 5. Relatively low level of internationalisation in Pardubice (e.g. availability of healthcare services in English). 6. Potential transition into stagnation or crisis phases of the economic cycle, leading to reduced funding for education and R&D&I in the coming years.

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: Faculty of Arts and Philosophy (FAP)

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:

The **Faculty of Arts and Philosophy** was established in 2001.^[1] Its social impact is primarily shaped by its engagement in the humanities, particularly in the disciplines of **history, philosophy, ethics, linguistics, religious studies, and literary history**, all within the sixth field of research classification. In the social sciences, the faculty contributes to strengthening social resilience, particularly in the resocialisation of minorities and groups displaying social deviance. Additionally, it is active in education sciences, teacher training, cultural anthropology, and sociology.

Between 2019 and 2023, the faculty comprised seven departments: **the Department of English and American Studies, the Department of Foreign Languages, the Department of Philosophy and Religious Studies (including the Centre for Ethics), the Department of Literary Culture, the Department of Social and Cultural Anthropology, the Department of Education, and the Institute of Historical Sciences**. The range of study programmes primarily focused on academic study programmes and evolved in response to fluctuations in student demand. Consequently, there was a decrease in the number of bachelor's study programmes, which were reduced from 11 to 7 between 2019 and 2023, whereas the number of follow-up master's programmes remained stable, with 8 programmes available at both the beginning and the end of the evaluation period, including one professionally oriented programme.

To enhance internationalisation, two new follow-up master's programmes were introduced in English during the period under review: *Ethics and Political Philosophy*^[2] and *English Philology*.^[3] From a societal perspective, the faculty also plays a key role in lifelong learning. The *University of Lifelong Learning*^[4] programme makes the latest research findings accessible to the wider public through a continuously updated semester-based curriculum. Furthermore, the faculty strengthens

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

pedagogical competencies through the *Supplementary Pedagogical Studies*^[5] programme, which was re-accredited in 2023 in line with current pedagogical trends. Since 2023, the faculty has also offered *Supplementary Didactic Studies of the English Language*^[6].

The number of faculty staff ranged between 108 and 125 employees, depending on research and development projects, which created positions for early-career researchers and administrative support for project implementation. In terms of academic qualifications, the faculty has maintained a stable academic environment with a slight upward trend in the number of professors and habilitated staff. Given the persistent gender imbalance, particularly among habilitated and professorial staff, the faculty has taken measures aligned with its developmental mission, as outlined in the Faculty's Strategic Plan. In this context, Directive No. 2/2022 was revised to introduce institutional support for early-career researchers.^[7] The aim is to provide motivation and financial support to female researchers in the so-called return phase of their careers, facilitating their reintegration into academia after maternity or parental leave.

Similarly, through targeted funding (external project financing), the faculty has successfully increased the participation of early-career researchers. In 2019, the faculty did not employ any academic staff under the age of 29; by 2023, this number had risen to five junior researchers. There was also an increase in the number of academic staff aged 30-39, rising from 25 to 31. A particularly positive trend is the growing number of habilitated staff in their productive years. In 2019, the faculty employed 13 habilitated researchers aged 40-59; by 2023, this figure had risen to 18.

The faculty achieves its best research results in alignment with the long-term vision set out in its Strategic Plan,^[8] particularly in the fields of *FORD 6.1 (History and Archaeology)* and *FORD 6.3 (Philosophy, Ethics, and Religion)*. This is reflected in data from the RIV system, which shows that, between 2019 and 2023, 60% of all recorded outputs originated from history and philosophy. Within the framework of *Module 1 of the 2017+ Methodology* for evaluating excellent research outcomes, the Faculty of Arts consistently ranks among the top five research institutions in the Czech Republic in the field of FORD 6, particularly due to its strengths in *FORD 6.1* and *FORD 6.3*. In 2023, for example, the faculty submitted 13 outputs for *Module 1* evaluation (predominantly from *FORD 6.1* and *FORD 6.3*), two of which received the highest rating of 1, six were rated 2, and five received a rating of 3.^[9]

The prominence of these disciplines is further illustrated by the fact that, in 2019, the university leadership identified three and from the year 2022 five research teams within the faculty with high potential for producing excellent research outputs – three in *FORD 6.1* and two in *FORD 6.3*.^[10] Since 2020, these teams have received dedicated institutional funding from DKRVO-generated income, aimed at providing continuous support to outstanding researchers and integrating junior researchers into the academic community. Each team is composed of experienced senior researchers in mentoring roles and early-career researchers.

The number of students at the Faculty of Arts remained stable throughout the evaluation period, fluctuating between 1,069 and 1,114. Female students accounted for approximately 70% of the student body.

The faculty has a long-standing tradition of collaboration in basic research with both domestic and international partner institutions. Experts from the Institute of History of the Czech Academy of Sciences contribute to lectures and research projects at the Institute of Historical Sciences at UPCE, while researchers from the Institute of Philosophy of the Czech Academy of Sciences are involved in teaching and research at the Department of Philosophy and Religious Studies at UPCE. The Institute for the Study of Totalitarian Regimes facilitates internships for students. The Department of Education Sciences collaborates intensively on applied research projects with governmental and regional authorities, including the Ministry of Labour and Social Affairs and the Pardubice Region.

At the international level, the Centre for Ethics at the Faculty of Arts and Philosophy at UPCE has significantly strengthened the faculty's global engagement.^[11] The centre provides employment opportunities for foreign researchers, thereby enhancing the internationalisation of the faculty. It also serves as a platform for securing external project funding for research initiatives. A particularly notable development is the faculty's increasing recognition as a host institution for international researchers applying for prestigious European funding schemes, such as MSCA Individual Fellowships and ERC grants. By prioritising the internationalisation of its academic environment, the faculty has successfully addressed previous criticisms highlighted in the last International Evaluation Panel (IEP) report, which had pointed to insufficient international collaboration.

Interfaculty cooperation has also been expanding, particularly with the Faculty of Electrical Engineering and Informatics at UPCE in the field of AI research, the Faculty of Restoration at UPCE on projects focused on tangible cultural heritage, and the Faculty of Economics and Administration at UPCE on sociologically oriented research into public spaces. Additionally, the faculty has participated in the organisation of the Society and Its Governance conference, held annually since 2023 in cooperation with the Faculty of Arts at UPCE.^[12]

HTML links to additional documentation:

- [1] <https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M3%20Faculty%20of%20Arts%20and%20Philosophy>
- [2] <https://ff.upce.cz/en/ff/ethics-and-political-philosophy>
- [3] <https://ff.upce.cz/ff/english-philology>
- [4] <https://ff.upce.cz/en/ff/university-of-lifelong-learning-202425>
- [5] <https://ff.upce.cz/en/ff/postgraduate-teaching-qualification-program-ptqp>
- [6] <https://ff.upce.cz/en/ff/pedagogical-qualification-program-for-english-language-teaching>
- [7] [Directive No. 2 2022 Principles of resource allocation for LCDSO.pdf](#)
- [8] <https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M3%20Faculty%20of%20Arts%20and%20Philosophy>
- [9] <https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M3%20Faculty%20of%20Arts%20and%20Philosophy>
- [10] <https://ff.upce.cz/en/ff/scientific-teams>
- [11] <https://centreforethics.upce.cz/en>
- [12] <https://ff.upce.cz/en/ff/conference>

Table 3.1.1 - Staffing per FTE²

Academic / Professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	3.43/2.33	3.2/2.01	4.16/2	4.43/2	4.68/1.84	19.91/10.17
Associate Professor	16.34/3	16.23/3.18	15.69/3.89	16.84/4.5	17.31/4.51	82.42/19.08
Assistant Professor	44.85/21.46	46.05/20.25	48.7/22.47	49.59/24.76	47.13/24.83	236.32/113.75
Assistant	10.76/5.54	12.62/7.48	13.13/8.54	10.47/7.51	9.34/5.79	56.30/34.85
R&D Personnel ³						
Researchers in other categories ⁴	1.05/0.75	0.48/0.48	1.55/0.75	6.64/2.73	4.55/2.64	14.27/7.35
Technical and economic staff ⁵	17.24/15.24	18.87/16.19	19.21/16.29	19.32/16.19	14.48/12.52	89.12/76.43
Scientific, research and development staff involved in teaching activities	9.17/2	8.81/1.75	7.4/1.24	6.38/2.22	0.34/0.08	32.1/7.3
Early career researchers ⁶	8.35/3.06	9.38/3.7	9.81/5.52	11.25/6.56	10.39/5.78	49.18/24.62
Total ⁷	93.67/48.32	97.44/49.57	102.44/53.94	107.29/57.68	97.49/52.13	498.33/261.64

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									2	1	3	2
Associate Professor					9	1	4	1	2	1	2	
Assistant Professor			8	4	29	12	7	6	2			
Assistant			5	2	4	2	2	1	1	1	1	
R&D Personnel ⁹												
Researchers in other categories ¹⁰					1	1	1	1				
Technical and economic staff ¹¹	1	1	6	5	6	6	5	4	1	1		
Scientific, research and development staff involved in teaching activities			3		6	1	1	1				
Early career researcher ¹²			9	3								
Total ¹³	1	1	19	11	49	22	19	13	8	4	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.

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					1				2	1	4	2
Associate Professor					10	2	8	2	2	2	2	
Assistant Professor			10	6	30	14	8	6	9	5		
Assistant	1	1	5	3	5	2	1	1			2	1
R&D Personnel ¹⁵												
Researchers in other categories ¹⁶	2	1	5	3	4	2						
Technical and economic staff ¹⁷	2	2	9	7	1	1	4	4	1	1		
Scientific, research and development staff involved in teaching activities												
Early career researcher ¹⁸	2	2	11	6								
Total ¹⁹	5	4	29	19	51	21	21	13	14	9	8	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.

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	759	537	779	559	716	496	734	471	723	481	3711	2544
Master's ²⁰	213	156	237	182	218	167	188	148	214	169	1070	822
Doctoral	77	42	74	42	74	41	72	38	61	32	358	195
Lifelong Learning Courses	70	57	80	66	81	68	78	59	84	65	393	315
Total	1114	788	1165	844	1087	771	1069	714	1080	746	5515	3863

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	11		10		8		7		7		43	
Master's	7	1	6	1	6	1	6/1	1	6/1	1	38/2	5
Doctoral	2/2		2/2		2/2		2/2		2/2		10/9	
Lifelong Learning courses	2		2		2		3		3		12	
Total	22/2	1	20/2	1	18/2	1	18/2		18/3		83/12	5

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		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 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	1	Balanced basic and applied research	20
	5.2 Economics and Business		Zvolte položku.	
	5.3 Education	10	Balanced basic and applied research	
	5.4 Sociology	9	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	30	Balanced basic and applied research	80
	6.2 Languages and Literature	20	Basic Research	
	6.3 Philosophy, Ethics and Religion	30	Basic Research	
	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 Faculty of Arts and Philosophy has consistently achieved excellent results in the field of humanities. In particular, in *FORD 6.1 (History and Archaeology)*, it ranked **5th among all evaluated research institutions in the national evaluation** of excellent research results under *Module M1 of the 2017+ Methodology* for the period 2019–2023. Among university institutions, it was surpassed only by Charles University and Masaryk University. Similarly strong results have been achieved by faculty departments in other research fields, particularly in *FORD 6.3 (Philosophy, Ethics, and Religion)*. As a result, the Faculty of Arts and Philosophy ranked 5th among all research institutions in the national comparison of *Module 1* evaluations within *FORD 6* (humanities), with only Charles University, Masaryk University, and Palacký University Olomouc ranking higher among university institutions.

Recognition within the academic community has also been reinforced by **prestigious awards for outstanding research**,^[1] granted by both national scientific organisations and international institutions. A particularly positive trend is the fact that these awards have been received by representatives of all generations of researchers. For example, **Zdeňka Horáčková** was awarded the *Academia Publishing House Student Award* for the best thesis in the humanities in 2023; **Lesley Jamieson** received the *C. G. Prado Dissertation Prize* from *Queen's University in Canada* in 2021; **Vladimíra Spilková** was honoured in 2020 with an award from the *Czech Educational Research Association* for a significant theoretical publication; and in 2019, **Petr Vorel** was awarded the *Palacký Medal of the Czech Academy of Sciences* for his contributions to the field of history. These examples illustrate the natural transfer of excellent research skills, knowledge, and expertise within the faculty, ensuring the continuity of its successful development (see Table 3.2.1 for further details).

The degree of internationalisation at the faculty can be assessed through the active participation of its members in the global research community. Membership in the editorial boards of international scientific journals is primarily held by representatives of historical sciences, philosophy, and ethics – fields that align with the faculty's dominant research focus. For instance, Kamila Pacovská and Silvia Caprioglio Panizza are members of the editorial board of the *Journal of Ethics*, which is indexed in the first quartile of Web of Science (WoS). Similarly, Petr Vorel holds the same position at *Historie Slavum Occidentis*, Poland's highest-ranked history journal (see Table 3.2.2 for additional examples).

As a result of high-quality research outputs published in international journals and publishing houses, combined with continuous participation in international conferences and the organisation of numerous high-profile academic events, faculty members are regularly invited to deliver guest lectures at foreign institutions. Listing all international conference participations would be too extensive, so priority is given here to invited lectures at foreign universities, which demonstrate the

geographical reach of the faculty's research impact. In 2022, Martin Čapský was a guest lecturer at the University of Cambridge; in 2023, Miroslav Šedivý was invited to speak at the Institute for the Study of the Habsburg Monarchy and the Balkans, Austrian Academy of Sciences in Vienna; and in 2022, Pavel Marek delivered a lecture at Universidad Complutense. A full list of faculty members' participation in international academic events is available in the RIV database (see Table 3.2.3 for selected examples).

Each year, international experts engage in the academic life of the faculty, not only through international conferences, workshops, and seminars, but also through invited lectures. Some of the most distinguished guest speakers include Roger Crisp (University of Oxford), Gerry Simpson (London School of Economics), and Alain Soubigou (Université Sorbonne) (see Table 3.2.4). Their involvement in teaching enables faculty staff to compare the development of research knowledge and methodologies at an international level and to incorporate the latest global academic advancements into their work. However, international conferences and workshops have proven to be an even more effective tool in fostering academic exchange and collaboration. Evidence of these events is available via the RIV system, and they have led to several international research projects, including securing prestigious research funding such as the ERC CZ project *Combatting Self-Righteousness*, led by John Lippitt.^[2]

Due to its strong reputation within the research community, faculty members are actively involved in evaluating research outputs, assessing grant applications for domestic and international funding bodies, and reviewing accreditation applications. Between 2019 and 2023, Petr Vorel chaired the Expert Panel for Evaluators under the 2017+ Methodology for FORD 6 (Humanities). In this role, he played a key part in shaping national evaluation criteria for excellent research results in the Czech Republic. Numerous other faculty researchers have served as evaluators for research organisations under the 2017+ Methodology, provided expert opinions in evaluation panels of the *Czech Science Foundation (GAČR)*, and participated in assessing grant applications for the *NAKI programme of the Ministry of Culture of the Czech Republic* and other national project funding schemes.

Faculty staff have also participated in evaluation panels of international funding agencies. Since 2022, Laura Candiotto has been a member of the evaluation committee of the Alexander von Humboldt Foundation in Germany, while Silvia Caprioglio Panizza has joined the evaluation panel of the *Fondo Nacional de Desarrollo Científico y Tecnológico* in Chile. Additionally, several faculty members are involved in assessing project funding applications for the Ministry of Education of the Slovak Republic and its VEGA programme (see Table 3.2.5 for further details).

HTML links to additional documentation:

[1] <https://ff.upce.cz/en/ff/research-awards>

[2] <https://centreforethics.upce.cz/en/self-righteousness>

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
Petr Vorel, prof. PhDr., CSc.	Palacký Medal of the Czech Academy of Sciences for Contributions to the Field of History (2019)	Czech Academy of Sciences
Vladimíra Spilková, prof. PhDr., CSc.	Award for a Significant Theoretical Publication (2020, based on a 2019 publication)	Czech Association for Educational Research
Pavel Marek, doc. Mgr., Ph.D.	Rector's Award of the University of Pardubice for the Prestigious Monograph <i>Gesandte und Klienten. Päpstliche und spanische Diplomaten im Umfeld von Kaiser Rudolf II.</i> (De Gruyter: Berlin-Boston, 2020) and Contributions to the Development of the Field of History	University of Pardubice
Petr Vorel, prof. PhDr., CSc.	Field Medal "For Merits in Numismatics" - Ob Merita Eius de Numismatica (2019)	Czech Numismatic Society
Lesley Jamieson, Mgr., Ph.D.	Award for the Best Dissertation - C. G. Prado Dissertation Prize (2021)	Queen's University, Canada
Kamila Pacovská, Mgr., Ph.D.	Rector's Award of UPCE for Young Researchers	University of Pardubice
Vladimíra Spilková, prof. PhDr., CSc.	Award for a Significant Research-Oriented Publication in the Category of Peer-Reviewed Article in a Czech or Slovak Journal (2022-2023)	Czech Association for Educational Research
Petr Vorel, prof. PhDr., CSc.	Honorary Membership in the Association of Historians of the Czech Republic "in recognition of outstanding works on the history of the early modern period and monetary systems" (2023)	Association of Historians of the Czech Republic
Zdeňka Horáčková, Mgr.	Student Award of Academia Publishing House in the Humanities and Social Sciences Category (2023)	Institute of Scientific Services of the Czech Academy of Sciences, v. v. i.
Laura Candiotta, doc., Ph.D.	Honorary Recognition in the Form of Appointment as Visiting Professor in Theoretical Philosophy	University of Modena and Reggio Emilia (UNIMORE) (March-May 2023)

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
Milena Lenderová, prof., PhDr., CSc.	Histoire, Économie, Société. La revue d'histoire économique et sociale du XVIe au XXe siècle – Armand Colin Publishing, ISSN: 0752-570
Martin Čapský, prof. Mgr., Ph.D.	Polish and World Middle Ages (<i>Średniowiecze polskie i powszechne</i>), ISSN: 2353-9720
Laura Candiotta, doc., Ph.D.	Plato Journal, ISSN: 2079-7567
Šárka Bubíková, doc. Mgr., Ph.D.	Cultural Perspectives: Journal for Literary and British Cultural Studies in Romania, ISSN: 2559-3439
Petr Vorel, prof. PhDr., CSc.	Klio – Journal of Polish and General History (Toruń, Poland), Member of the Editorial Advisory Board, ISSN: 1643-8191
Petr Vorel, prof. PhDr., CSc.	Historia Slavorum Occidentis (Poznań, Poland), Chairman of Editorial Board, ISSN: 2084-1213. Rated as the highest-ranking scientific journal across all disciplines in the Polish evaluation system (100 pts)
Kamila Pacovská, Mgr., Ph.D.	Journal of Ethics, ISSN 1382-4554
Nora Hämmäläinen, doc. Ph.D.	SATS, ISSN 1869-7577
Silvia Caprioglio Panizza, doc., Ph.D.	Journal of Ethics, ISSN 1382-4554
Laura Candiotta, doc., Ph.D.	Plato Journal, ISSN 2079-7567

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
Šárka Bubíková, doc. Mgr., Ph.D.	Representations of Space in Contemporary American Crime Fiction.	European Society for the Study of English (ESSE), Lyon, France.	2021
Lesley Jamieson, MA, Ph.D.	Iris Murdoch and Philosophical Method.	British Society for the History of Philosophy Annual Conference	2021
Miroslav Šedivý, prof. PhDr., Ph.D.	Si vis pacem, para bellum: Die italienische Reaktion auf die internationale Unsicherheit 1830–1848.	Institut für die Erforschung der Habsburgermonarchie und des Balkanraumes, Österreichische Akademie der Wissenschaften, Wien.	2022
Pavel Marek, doc. Mgr., Ph.D.	Bohemia hispánica. La influencia política y cultural hispánica en el Reino de Bohemia en la edad moderna.	Facultad de Geografía e Historia Universidad Complutense de Madrid	2022
Miroslav Šedivý, prof. PhDr., Ph.D.	The Geopolitical Background of the Debates on International Law in the Mid-19th Century.	Vrije Universiteit Brussel.	2022
Kamila Pacovská, Mgr., Ph.D.	Home as a Place of Evil: Why Moral Psychology Shouldn't Shun Maltreated Children.	Dutch Research School of Philosophy's (OZSW) Moral Psychology Study group, Tilburg University	2022
Martin Čapský, prof. Mgr., Ph.D.	Spiritual Meal, Identity, and Community in Bohemia 1400–1650: Historical Anthropology and the Reformation of Food.	University of Cambridge (Guest speaker at the 'Medieval Encounters' seminar)	2022
Jiří Kubeš, doc. Mgr., Ph.D.	A Typology of Travels of the Czech Nobility in the 17th and 18th Centuries (with Special Focus on Trips to France).	Université de Reims Champagne-Ardenne	2023
Vladan Hanulík, Mgr., Ph.D.	Heterotopy of Spas: A World Between Leisure and Heroic Healing Cures.	Université de Strasbourg	2023
Karel Rýdl, prof., PhDr., CSc.	Montessori in the Czech Republic and Its Prospects.	Austrian Montessori Association (ÖMV), Vienna	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
Frisbee Sheffield, Ph.D.	University of Cambridge	The Unity of the Phaedrus	2021
Christopher E. Forth, prof., Ph.D.	University of Kansas	Dieting with Sartre, or, Why fat is an existential issue	2021
Stephen Mulhall, Ph.D.	Oxford University	Intensive Seminar with Stephen Mulhall	2022
Roger Crisp, prof., Ph.D.	Oxford University	What Matters in Survival	2022
Gerry Simpson, prof., Ph.D.	London School of Economics	Home and Away: Some Thoughts on Internationalism	2022
Sophie Grace Chappell, prof., Ph.D.	Open University	Inwardness in Ethics	2022
Thomas Brogan, Ph.D.	Institute for Aegean Prehistory	An Archaeology of the Bronze Age Senses	2022
Beatriz Bossi, prof., Ph.D.	Complutense University of Madrid	Desire and Rationality in the Myth of Er	2023
Alain Soubigou, prof., Ph.D.	Sorbonne Université	The Massacre in Pardubice on 7 June 1918	2023
Alice Cary, prof., Ph.D.	New School for Social Research, New York	Political Possibilities	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
Petr Vorel, prof., PhDr., CSc,	Chair of Expert Panel 6: Humanities and Arts under the Methodology for Evaluating Research Organisations and Research, Development, and Innovation Support Programmes	Government Council for Research, Development, and Innovation	2019-2023
Šárka Bubíková, doc., Mgr., Ph.D.	VEGA Grant Agency	Ministry of Education, Research, Development, and Youth of the Slovak Republic	2019-present
Karel Rýdl, prof., PhDr., CSc.	NAKI II (Programme for the Support of Applied Research and Experimental Development of National and Cultural Identity)	Ministry of Culture of the Czech Republic	2019-2022
Jiří Kubeš, doc., Mgr., Ph.D.	Evaluator for Historical Sciences for the National Accreditation Bureau and Member of the Standing Accreditation Committee for Historical Sciences	National Accreditation Bureau for Higher Education of the Czech Republic	2019-2024
Pavel Marek, doc. Mgr., Ph.D.	Evaluator of Research Organisations under the Methodology 17+	Department of the Government Council for Research, Development, and Innovation, Office of the Government of the Czech Republic	2020-present
Adriana Sychrová, Mgr., Ph.D.	ÉTA Programme	Technology Agency of the Czech Republic (TAČR)	2020-2021
Silvia Caprioglio Panizza, doc. Ph.D.	FONDECYT (Fondo Nacional de Desarrollo Científico y Tecnológico)	National Commission for Scientific and Technological Research, Chile	2022
Martin Čapský, prof., Mgr., Ph.D.	Evaluator for NAKI II	Ministry of Culture of the Czech Republic	2022
Laura Candiottto, doc., Ph.D.	Alexander von Humboldt Stiftung	Alexander von Humboldt Stiftung, Germany	2022-present
Jiří Kubeš, doc. Mgr., Ph.D.	GAČR, Member of Panel P405 – Archaeology and Early History	Czech Science Foundation (GAČR)	2023-present

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:

During the evaluation period, the Faculty of Arts and Philosophy at UPCE secured external funding amounting to **CZK 117.875.000 (EUR 4.659.096)**. The majority of these funds originated from targeted public funding for research activities. Specifically, **CZK 86.086.000 (EUR 3.402.608)** was obtained by **the faculty as the lead institution in research and applied research projects** funded from public sources, while **CZK 6.894.000 (EUR 272.491)** was received **as a partner institution in research and applied research projects**. Additionally, contract research for external clients contributed CZK 1.848.000 (EUR 73.035) to the faculty's budget.

This funding distribution clearly reflects the faculty's primary focus on basic research, which in the Czech Republic is predominantly supported by public funding. This aligns with the Faculty's Strategic Plan and corresponds to the faculty's standing within the academic community, as demonstrated by measurable indicators of excellent research outcomes under the 2017+ Methodology.

1) **Project Title:** Centre for Ethics as Study in Human Value^[1]

Programme: OP VVV Project

Lead Institution: University of Pardubice, Faculty of Arts and Philosophy

Principal Investigators: Mgr. Kamila Pacovská, Ph.D. / doc. Ondřej Beran, Ph.D.

Project Duration: 2017–2022

This project focused on establishing a research infrastructure to support an international research team and facilitate world-class research in ethics through the creation of the Centre for Ethics at the Faculty of Arts and Philosophy. In addition to the faculty, the project involved strategic partners such as King's College London and the University of Melbourne. The research team formed within the Department of Philosophy and Religious Studies included five domestic researchers and ten international scholars, among them three associate professors and one full professor.

The project was academically oriented towards the Anglo-American tradition of moral philosophy. Its outcomes included a substantial body of publications, the organisation of numerous international conferences and workshops, and – most importantly – the accreditation of an English-taught doctoral study programme, which facilitated knowledge transfer among early-career researchers. The Centre for Ethics successfully fostered an international doctoral community, which became

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.

an integral part of the centre's team, engaged in its activities, and even organised international doctoral conferences.

The project's outcomes were not only disseminated among the academic community in the form of books and journal articles in impact-factor journals but were also actively communicated to the public through the podcast Philosophy Voiced and a public-facing blog. The project was inherently interdisciplinary, integrating philosophy, political science, aesthetics, religious studies, and the history of science, all unified under a shared emphasis on ethics and moral philosophy.

2) Project Title: Representation and Practice of Social Control in Late Medieval Urban Communities^[2]

Programme: GAČR – Standard Projects (1993–2050)

Lead Institution: University of Pardubice, Faculty of Arts and Philosophy

Principal Investigator: prof. Mgr. Martin Čapský, Ph.D.

Project Duration: 2020–2022

The primary outcome of this project was a monograph authored by an international research team, based on methodological insights from Western European urban historiography. Alongside English-language journal articles, this publication actively contributes to international scholarly discourse. The project facilitated international research collaboration between Czech and Polish historians while also fostering an interdisciplinary research approach by incorporating scholars from the Faculty of Law at Charles University in Prague. The research team focused on the development of Czech royal towns, comparing their administrative transformations with other urban centres in Central and East-Central Europe.

Through extensive archival research, the project authors demonstrated the existence of a similar administrative turning point in both urban environments, albeit with differing outcomes. This interdisciplinary project thus contributes to discussions on regional similarities and divergences in European historical development. The project's interdisciplinary scope enabled collaboration between experts in cultural history, the history of visual culture, and legal aspects of urban development, offering new insights into medieval urban governance.

3) Project Title: The Russian Radical Right in Exile, 1918–1945^[3]

Programme: GAČR – Standard Projects

Lead Institution: University of Pardubice, Faculty of Arts and Philosophy

Principal Investigator: Mgr. Zbyněk Vydra, Ph.D.

Project Duration: 2020–2023

The research team consisted of the principal investigator and four collaborators from various institutions in the Czech Republic (Faculty of Arts and Philosophy at UPCE, Centre for the Study of Democracy and Culture, Faculty of Arts at Charles University, and the Masaryk Institute of the Czech Academy of Sciences). The project focused on a topic of significant international relevance – the continuity and discontinuity of the Russian far right between the Tsarist era (pre-1917) and exile, to which representatives of the radical right were forced to flee.

The research examined several major groups and movements within the far-right exile community, particularly monarchists, Young Russians (Mladorossy), and fascists. A key question was their relationship to the pre-revolutionary far-right paradigm, encapsulated in the triad "Orthodoxy, Autocracy, and Nationality", which was further complemented by antisemitism. This ideological framework served as the foundation for their visions of a future Russia.

The research demonstrated that the far right in exile largely remained loyal to this triad, yet new movements (Young Russians and fascists) were able to modify it in response to generational shifts and the evolving international political landscape. The project involved extensive international

research across multiple countries, including the United States, the United Kingdom, Russia, Germany, Italy, and Serbia. The primary research output is a monograph titled *Without the Tsar and Fatherland: Russian Radical Right in Exile, 1918–1945*, which is scheduled for publication by the prestigious international publisher Routledge in 2025.

4) Project Title: The German Response to Uncertainty in International Relations: Germans and Europe between Codified Law and the Law of the Strongest, 1839–1853^[4]

Programme: GAČR – Standard Projects

Lead Institution: University of Pardubice, Faculty of Arts and Philosophy

Principal Investigator: prof. Mgr. Miroslav Šedivý, Ph.D.

Project Duration: 2021–2023

The objective of this project was to highlight the strong interaction between international politics and the development of German society between 1839 and 1853. For the first time, it analysed phenomena that had previously been studied in isolation, including:

- The rise of German nationalism
- Calls for naval armament and colonial expansion
- The genesis of Realpolitik and the concept of Mitteleuropa
- Deteriorating relations and wars with other nations
- Germany's participation in the peace movement

The study examined manifestations of this underexplored phenomenon in German and broader European history, culminating in an English-language monograph as its main outcome. The project offered an in-depth analysis of an almost entirely unknown response of German society to international events, as well as the impact of these responses on both German society and international relations in the mid-19th century.

The research findings were presented in four peer-reviewed academic studies and one English-language monograph published by Brill, significantly integrating research conducted at the Faculty of Arts and Philosophy at UPCE into the international scholarly community.

5) Project Title: The Sovereign's Debt and State Bankruptcy of 1615 in the Kingdom of Bohemia (Economic Contexts of the Outbreak of the "Bohemian Revolt" in 1618)^[5]

Programme: GAČR – Standard Projects

Lead Institution: University of Pardubice, Faculty of Arts and Philosophy

Principal Investigator: prof. PhDr. Petr Vorel, CSc.

Project Duration: 2022–2024

The aim of this project is to strengthen the Faculty of Arts and Philosophy's specialisation in economic history. The primary research output is the publication *Chrudim Region in 1615* – an innovative book that reconstructs the historical landscape of the region shortly before the outbreak of the Thirty Years' War. The book is based on a detailed reconstruction of the region's property structure, using a 1615 tax register. It is enriched with cartographic, heraldic, genealogical, and visual supplements, including depictions of noble estates and residences.

This publication makes a significant contribution to shaping the historical identity of the Pardubice Region, as its modern administrative boundaries largely correspond to those of the historical Chrudim Region. The book is authored by Petr Vorel, Zuzana Vlasáková, and David Richter, bringing together an eminent researcher and the youngest generation of historians. This collaboration aims to foster the development of a promising future research team, ensuring continuity in the faculty's research focus.

A secondary objective is to enhance the faculty's academic reputation within the wider Pardubice region, owing to the localised scope of the research, which will nevertheless be interpreted within a broad analytical framework.

6) Project Title: ECEGADMAT / EKEZÚZMHT – A Bad Feeling About Climate, etc., and Its Various Forms^[6]

Programme: GAČR – Standard Projects

Lead Institution: University of Pardubice, Faculty of Arts and Philosophy

Principal Investigator: doc. Ondřej Beran, Ph.D.

Project Duration: 2022–2024

This project explores the diversity of human emotional responses to environmental degradation. Firstly, it acknowledges the range of existing terminologies that capture these responses: environmental/climate/ecological grief/anxiety/despair/melancholy/anger/trauma (summarised by the acronym EKEZÚZMHT). Secondly, while many existing studies on EKEZÚZMHT focus on its mental health aspects, this project seeks to conceptualise it as an emotion – a cognitive state or attitude shaped by cultural stimuli and cultivation.

The project analyses EKEZÚZMHT as an emotional phenomenon by examining its relationships to the stimuli that trigger it, as well as to opposing emotions. A key focus is on how cultural stimuli – including literature, film, and documentary media – contribute to the experience of EKEZÚZMHT or, conversely, help individuals overcome it by fostering an active response.

The principal investigator primarily publishes research findings in international journals, thereby strengthening the international engagement of the Faculty of Arts and Philosophy at UPCE in the global discussion on the role of the humanities in addressing contemporary environmental crises. In this regard, the project promotes interdisciplinary collaboration by engaging experts from a broad spectrum of disciplines, not only from philosophy and the humanities but also from natural and technical sciences. This expands interfaculty cooperation at UPCE and enhances the faculty's integration into an international research community that values the innovative potential of interdisciplinary research.

7) Project Title: Moral Impossibility: Rethinking Choice and Conflict^[7]

Programme: Marie Skłodowska-Curie Individual Fellowship

Principal Investigator: Silvia Caprioglio Panizza, Ph.D.

Project Duration: 2022–2023

This prestigious MSCA-funded project (2022–2023) addressed the ethical principles underlying moral decision-making. Within the project's framework, moral impossibility (MI) refers to actions that are beyond the realm of available choices due to moral constraints.

Less obvious moral possibilities shape and define all choices, often subtly, including those we never consciously consider and those that do not always seem rational. The project demonstrated that neglecting the role of moral impossibility leads to fundamental misrepresentations of conflict situations in contemporary philosophy. In response, the research developed a new theoretical framework for moral impossibilities and introduced a method for analysing seemingly intractable moral conflicts.

Following the project's completion, the principal investigator successfully joined the Centre for Ethics at the Faculty of Arts and Philosophy at UPCE, further reinforcing the faculty's internationalisation in both research and teaching.

8) Project Title: Philosophy as Cultural Self-Knowledge: R. G. Collingwood, Peter Winch, and the Human Sciences^[8]

Programme: Marie Skłodowska-Curie Individual Fellowship

Principal Investigator: doc. Olli Lagerspetz, Ph.D.

Project Duration: 2022

This MSCA-funded project examined the role of the humanities and social sciences in supporting a thriving civil society. An informed public debate on the good life requires reflective cultural self-understanding, which philosophy and the humanities are uniquely positioned to offer.

At the heart of cultural reflection lies conceptual analysis, a core function of philosophy. However, this vision of philosophy and the humanities as cultural self-knowledge remains a minority perspective in contemporary academia. Nevertheless, it found strong advocates in the 20th century, particularly in the works of two leading philosophers of history and the social sciences: R. G. Collingwood (1889–1943) and Peter Winch (1926–1997).

The project aimed to confront and synthesise the philosophical contributions of these two thinkers, re-examining fundamental questions concerning:

- The place of philosophy among the sciences
- The nature of philosophical inquiry itself
- The role of philosophy in shaping civil society and addressing its challenges

Following the project's conclusion, the principal investigator has continued collaborating with the Centre for Ethics at the Faculty of Arts and Philosophy at UPCE. His work has facilitated doctoral student mobility and created opportunities for UPCE to participate in international consortium-based research projects.

9) Project Title: Escape into Nature: Consolatory Interactions with the Natural World in Contemporary Literature and Culture^[9]

Lead Institution: Jagiellonian University

Faculty of Arts and Philosophy UPCE Research Team Members: doc. Mgr. Šárka Bubíková, Ph.D., Mgr. Olga Roebuck, Ph.D.

Project Duration: 2023

This project, focusing on the representation of environmental issues in literature, brought together academics and doctoral students from Jagiellonian University in Kraków, Ignatianum University in Kraków, the University of Niš, the University of Ostrava, and the University of Pardubice.

The project's main outcomes included:

- A specialised panel at an international conference hosted by Jagiellonian University in Kraków
- An international workshop for participating researchers, open to students, held at the Faculty of Arts and Philosophy at UPCE
- A scholarly monograph, currently under peer review at Brill Publishing

Additionally, the workshop was followed by a series of public lectures at the University of Leisure and the British Centre in Pardubice. As a result, the project's findings were not only disseminated within the academic community but also made accessible to the wider public.

10) Project Title: Beyond Security: The Role of Conflict in Resilience-Building^[10]

Programme: OP JAK Project

Lead Institution: Faculty of Arts, Charles University

Faculty of Arts and Philosophy UPCE as a Consortium Partner

UPCE Coordinator: Mgr. Kamila Pacovská, Ph.D.

Project Duration: 2023–2028

This interdisciplinary project takes a practically oriented and applied research approach to examining the relationship between conflict and resilience in society (primarily in the Czech Republic). Resilience is understood as a problem-driven area of research, focusing on the interaction between resilience and conflict within Czech society, particularly in relation to the ongoing war in Ukraine, the current climate crisis, energy issues, and migration challenges.

Such a complex research focus requires the integration of top-tier research groups, including ERC grant holders, the development of research teams, and intensive engagement in the European Research Area (ERA), thus contributing to the internationalisation of research.

Beyond the Faculty of Arts and Philosophy at UPCE, the project involves nine partner institutions, including:

- The Institute of Philosophy and the Institute of Sociology of the Czech Academy of Sciences
- The Faculty of Law at Masaryk University
- The Faculty of Social Sciences and the Faculty of Arts at Charles University

More than 200 researchers are actively participating in this initiative. The project fosters close collaboration between leading research institutions and significantly enhances the interdisciplinary recognition of the Faculty of Arts and Philosophy at UPCE at both the national and international levels. The cross-disciplinary nature of the research also encourages engagement between diverse academic fields, thereby promoting broader scientific integration and dialogue.

HTML links to additional documentation:

[1] <https://centreforethics.upce.cz/en/centre-ethics-study-human-value>

[2] <https://starfos.tacr.cz/en/projekty/GA20-11247S>

[3] <https://starfos.tacr.cz/en/projekty/GA21-02257S>

[4] <https://starfos.tacr.cz/en/projekty/GA22-11931S?query=3jgqaadbeh3a>

[5] <https://starfos.tacr.cz/en/projekty/GA20-09721S?query=6wxaaadczitq>

[6] <https://starfos.tacr.cz/en/projekty/GA22-15446S?query=zxriac6ttwg>

[7] <https://cordis.europa.eu/project/id/101026701>

[8] <https://cordis.europa.eu/project/id/101026669>

[9] <https://cordis.europa.eu/project/id/101026669>

[10] <https://ff.upce.cz/en/ff/beyond-security-role-of-conflict-in-resilience-building>

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 Science Foundation (GAČR)	Midwives: Professionalisation, Institutionalisation, and Practice of the First Historically Qualified Women's Profession Over Two Centuries (1804–1948) – Prof. Lenderová	1 133 / 44 783				
GAČR	Political Philosophy in the Czech Lands in the 17th Century – Mgr. Šolcová	821 / 32 451				
GAČR	Location and Community in Contemporary Anglophone Crime Fiction – Doc. Bubíková	496 / 19 605	491 / 19 407	605 / 23 913		
GAČR	Autonomy and Alterity: Kant in Dialogue – Dr. Sikora	781 / 30 870	811 / 32 055	719 / 28 419		
GAČR	Russian Radical Right in Exile, 1918–1945 – Dr. Vydra		872 / 34 466	870 / 34 387	866 / 34 229	
GAČR	Representation and Practice of Social Control in Late Medieval Urban Communities – Prof. Čapský		739 / 29 209	737 / 29 130	999 / 39 486	
GAČR	Shaping the Role of the Doctor and the Patient: The History of the Doctor-Patient Relationship in the Czech Lands (1769–1992) – Dr. Hanulík		823 / 32 530	767 / 30 316	852 / 33 676	
GAČR	German Reactions to Uncertainty in International Relations: Germans and Europe Between Written Law and the Law of the Strong (1839–1853) – Prof. Šedivý			764 / 30 198	777 / 30 711	996 / 39 368
GAČR	"ECEGADMAT" / "EKEZÚZMHT": Negative Feelings About Climate Change and Their Various Forms – Doc. Beran				1 852 / 73 202	2 750 / 108 696
GAČR	Nietzsche's First Philosophy in a New Perspective – Dr. Wood				932 / 36 838	1 099 / 43 439
GAČR	Humiliated Before the Court: Divorces and Marital Conflicts in the Czech Lands (1783–1918) – Dr. Pavelková Čevelová				636 / 25 138	1 084 / 42 846
GAČR	The Sovereign's Debt and State Bankruptcy of 1615 in the Kingdom of Bohemia (Economic Context of the Outbreak of the "Bohemian War" in 1618) – Prof. Vorel				1 269 / 50 158	1 644 / 64 980
Ministry of Education, Youth and Sports – Operational Programme Research, Development and Education (MŠMT – OP VVV)	Centre for Ethics	19 414 / 767 366	15 529 / 613 799	19 632 / 775 973	17 897 / 707 397	

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	Cemetery Memory: Research and Documentation for Sustainable Care of Sepulchral Monuments in the Former Sudetenland (FAP UPCE Section) – Doc. Panoch		1 210 / 47 826	1 213 / 47 945	1 107 / 43 755	
Horizon – MSCA	Moral Impossibility: Rethinking Choice and Conflict (MIGHT) – Dr. Panizza			2 379 / 94 014	1 091 / 43 133	181 / 7 165
Horizon – MSCA	Philosophy as Cultural Self-Knowledge: R. G. Collingwood, Peter Winch, and the Human Sciences (WC-Cult) – Doc. Lagerspetz				1 250 / 49 395	643 / 25 409
Total		22 645 / 895 073	20 475 / 809 293	27 686 / 1 094 295	29 528 / 1 167 119	8 397 / 331 901
In the role of another participant						
Provider ²⁷	Project name	Support (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
Czech Science Foundation (GAČR)	Key Cultural Sources, Concepts, and Practices of Western Alternative Spirituality and Medicine					422 / 16 680
Ministry of Education, Youth and Sports – Operational Programme Johannes Amos Comenius (MŠMT – OP JAK)	Beyond Security: The Role of Conflict in Resilience-Building					869 / 34 330
GAČR	The Relationship Network of Papal Nuncios and Spanish Envoys at the Imperial Court at the Turn of the 16th and 17th Centuries	402 / 15 889				
Ministry of Labour and Social Affairs (MPSV)	Innovative Approaches to Supporting At-Risk Families with Children in the Pardubice Region		1 535 / 60 668	1 602 / 63 326	1 652 / 65 288	815 / 32 199
Total		402 / 15 889	1 535 / 60 668	1 602 / 63 326	1 652 / 65 288	2 105 / 83 209

²⁷ Ibid.

Table 3.3.2 - Contract research activities

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
National Cultural Monument Vyšehrad	Vyšehrad – Spatial Identification of Underground Casemate Corridors		80 / 3 162			
National Cultural Monument Vyšehrad	Vyšehrad – Architectural and Historical Survey of Part of the Casemates			10 / 375		
Town of Jaroměř	Jaroměř – Spatial Identification and Documentation of the so-called Old Military Hospital Complex in Jaroměř–Josefov				309 / 12 213	
Town of Jaroměř	Jaroměř – Architectural and Historical Survey of the so-called Square (Artillery) Barracks in Jaroměř–Josefov				990 / 39 130	
National Cultural Monument Vyšehrad	Vyšehrad – Architectural and Historical Survey of the Gates of the National Cultural Monument Vyšehrad					449 / 17 759
Pěstuj prostor z.s.	Analysis on the Topic of High-Quality Public Spaces		10 / 395			
Total			90 / 3 557	10 / 375	1 299 / 51 344	449 / 17 759

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:

1) Project Title: Innovative Approaches to Supporting At-Risk Families with Children in the Pardubice Region^[1]

Programme: Operational Programme Employment Plus 2021–2027

Lead Institution: Pardubice Region

Faculty of Arts and Philosophy UPCE as a Consortium Partner (1 of 3)

UPCE Coordinator: Mgr. Adriana Sychrová, Ph.D.

Project Duration: 2020–2023

The project aimed to transform child and family welfare services, ensuring that public administration professionals focused primarily on direct work with children and families. The goal was to provide services that better reflect the actual needs of clients, leading to more effective interventions.

The Faculty of Arts and Philosophy at UPCE coordinated the implementation of innovative approaches at three OSPOD (Child Welfare Authorities) offices in Lanškroun, Žamberk, and Česká Třebová, as well as at the Regional OSPOD of the Pardubice Regional Authority. This enabled individualised and coordinated work with families and strengthened collaboration with other organisations within the child protection system. Each site focused on a specific aspect of transformation:

- Divorce-related child welfare cases
- Risk assessment and family intervention planning
- The role of social workers within the child protection system

With support from experts in child welfare, psychology, and law, as well as through the transfer of international best practices from the Netherlands (Vanguard Method and Service Design Method), the Faculty of Arts and Philosophy contributed to a systemic shift in how children and families are supported.

The Regional OSPOD incorporated project findings into methodological guidelines, leading to changes at both client-facing and systemic levels. Impact evaluation results confirmed that the newly introduced working methods had a direct positive effect on improving family situations and enhancing cooperation between institutions and service providers within the child welfare system. The sustainability of the project outcomes is ensured through a follow-up project (Together for Supporting Families with Children in the Pardubice Region, 2024–2027, OPZ MPSV). Additionally, the project has significant implications for gender strategies in child-rearing.

²⁹ See Terms definition.

2) Exhibition Title: From the Silver Czech Thaler to the Worldwide Dollar

Commissioned by: East Bohemian Museum in Pardubice, Institute of Arts at Universidad Autónoma del Estado de Hidalgo in Real del Monte

Principal Investigator: Prof. PhDr. Petr Vorel, CSc.

Project Duration: 2019–2022

Organised by the East Bohemian Museum in collaboration with the University of Pardubice, this exhibition was presented at the Institute of Arts at Universidad Autónoma del Estado de Hidalgo in Real del Monte, Mexico.

The exhibition's venue was directly relevant to its subject, as the region was historically known for its silver mines, which played a pivotal role in the early modern global silver trade—and, by extension, in the development of thaler-based currencies.

The exhibition explored the origins and evolution of thaler-based monetary systems in 16th-century Europe, beginning with the large silver coins minted in Jáchymov (Joachimsthal) in 1520. These coins, initially known as Joachimsthalers (or simply thalers, after the German name of the town), eventually lent their name to all coins of this general type, including the modern dollar.

The exhibition consisted of:

- Display panels with historical photographs
- Electroformed copies of rare historical coins, produced by museum conservator Michal Vojtěchovský using original museum specimens

The exhibition showcased the museum's extensive numismatic collection, which includes approximately 50,000 items. A significant portion of the exhibition later became part of a permanent display at the East Bohemian Museum—"You Can't Take Money to the Grave"—which remains a key component of the museum's revamped exhibition programme. This permanent display has significantly increased museum visitor numbers, contributing to sustained revenue from cultural tourism.

3) Project Title: Spatial Identification of Underground Casemates of the Former Military Fortress Vyšehrad (17th–19th Century) in Relation to Above-Ground Structures and Earthworks

Commissioned by: City of Jaroměř (Research Contract No. 1430/20)

Principal Investigators: MgA. František Václavík, Mgr. Bohdan Šeda

Project Duration: 2020

This contracted research project was commissioned by the National Cultural Monument Vyšehrad, a heritage institution under the City of Prague. The project focused on archaeological and architectural documentation, specifically:

- Mapping the complete network of underground tunnels and casemates
- Determining their spatial position within the fortress infrastructure using mobile laser scanning
- Conducting a historical architectural analysis to interpret the findings in terms of construction techniques and structural evolution

For the first time in the history of the National Cultural Monument Vyšehrad, the project provided a comprehensive interpretation of the actual course of underground corridors in relation to the fortress's complex above-ground terrain. The research findings were incorporated into pre-project planning and serve as an essential resource for the preservation and restoration of the site. The project was conducted in interdisciplinary collaboration with the Faculty of Transport Engineering at UPCE, which carried out ground-penetrating radar (GPR) surveys, geophysical studies, and seismic measurements.

These methods helped identify the probable location of fortification walls beneath the earthworks and detect the bedrock. The research is part of a wider initiative to promote alternative heritage tourism in Prague. It will contribute to the development of a newly established heritage visitor trail at Vyšehrad, aimed at increasing domestic and international tourist interest in the site.

- 4) Research Report Title:** Transformations of Public Space in Pardubice Housing Estates – Dubina
Commissioned by: Department of Education, Culture, and Sports, Pardubice City Hall; Dubina Municipal District
Principal Investigator: Mgr. Hana Synková, Ph.D.
Research Year: 2020

This study on public space in Pardubice housing estates examines the perceptions of Dubina/Polabiny residents regarding public spaces. It provides insights into the development and enhancement of public spaces to better meet the needs of residents and users.

The research was conducted in response to requests from multiple stakeholders, including the Offcity Association, Pěstuj Prostor Association, Dubina/Polabiny Municipal District, and the Department of Education, Culture, and Sports of Pardubice City Hall.

Beyond assessing the quality of specific public spaces, the study also addressed general satisfaction with cultural amenities, parking issues, and safety concerns. The methodology was based on qualitative research methods, including interviews and observations. The findings were incorporated into urban planning decisions, influencing modifications to the public space in the studied area.

- 5) Project Title:** Spatial Identification and Documentation of the Former Military Hospital Complex in Jaroměř – Josefov (Building No. 4) for the Purpose of Historical and Structural Research
Commissioned by: City of Jaroměř (Research Contract No. 1018/21)
Principal Investigators: MgA. František Václavík, Mgr. Bohdan Šeda
Project Duration: 2021

This contracted research project was commissioned by the City of Jaroměř under the Framework Agreement on Cooperation (No. 1015/21) between the Faculty of Arts and Philosophy at UPCE and the City of Jaroměř. The agreement primarily supports education, science, and research. The project focused on comprehensive documentation of the monumental four-winged former military hospital building, which underwent significant adaptations throughout the 20th century to accommodate modern medical operations.

Key research activities included:

- Complete 3D scanning of the building using mobile scanning technology
- Detailed survey of the current state of the structure
- Basic photographic documentation
- Spatial and functional analysis of the building

Students from the Institute of Historical Sciences at UPCE actively participated in the documentation and research process, gaining hands-on experience in the study of historical architecture. The City of Jaroměř is using the project outcomes to inform subsequent pre-project and project planning for the building's restoration. The research findings also played a role in strategic planning for the surrounding area, which had previously been designated as a socially excluded zone with high levels of social deviance. The long-term objective is to enhance tourism in the locality and ensure its sustainable economic development.

6) Project Title: Three Decades of East Bohemian Literary Culture (1990–2020)

Funding Provider: Pardubice City Hall

Principal Investigator: PhDr. Ivo Říha, Ph.D.

Project Duration: 2021

This project was funded by the Pardubice City Hall under the "Cultural Support Programme for 2021" (MmP 78343/2021) and focused on mapping and documenting the development of East Bohemian literary culture in the post-1989 period.

Researchers from the Department of Literary Culture at the Faculty of Arts and Philosophy at UPCE conducted the study, which resulted in the publication *Společné obrazy: Tři dekády východočeské literární kultury 1990–2020* (*Shared Images: Three Decades of East Bohemian Literary Culture 1990–2020*), First edition, Červený Kostelec: Pavel Mervart, 2022, 55 pages, ISBN: 978-80-7465-564-7.

The project's outcomes are widely used in regional education, as the publication provides the only comprehensive overview of literary developments in the Pardubice region in recent decades.

7) Project Title: Architectural and Historical Survey of the Former Cavalry Barracks (Building No. 3, Parcel No. 48) in the Cadastral Area of Josefov near Jaroměř

Commissioned by: City of Jaroměř

Principal Investigators: MgA. František Václavík, Mgr. Bohdan Šeda

Project Duration: 2021

This contracted research project was commissioned by the City of Jaroměř under the Framework Agreement on Cooperation (No. 1015/21) between the Faculty of Arts and Philosophy at UPCE and the City of Jaroměř, focusing primarily on education, science, and research.

The monumental four-winged building of the former cavalry barracks ranks among the largest military construction projects of the Austrian monarchy. The architectural and historical survey was conducted by a team comprising architectural historians, military history specialists from the Institute of Historical Sciences at UPCE, and external experts on military structures.

Key research components included:

- Archival research, including previously untapped sources from Viennese archives
- Comprehensive documentation of the building's structure
- Active involvement of students from the Institute of Historical Sciences at UPCE, who gained hands-on experience in historical architectural documentation and research

The survey of this significant military structure is a prerequisite for obtaining national and European funding for its restoration. Additionally, it is a fundamental requirement of the national heritage conservation authorities for planning the building's future restoration. In the long term, the site is expected to serve as a multifunctional historical facility, supporting tourism development in the region.

8) Research Report Title: Teachers' Motivation and Barriers to Further Professional Development

Commissioned by: Elixír do škol, z.s.

Principal Investigator: Mgr. Michaela Konopíková, Ph.D.

Research Year: 2023

This research report was produced as part of a collaborative project between the Department of Social and Cultural Anthropology at the University of Pardubice and the non-governmental non-profit organisation Elixír do škol. The study aimed to identify the barriers and motivations influencing primary and secondary school teachers' decisions to engage in further professional development.

Using qualitative research methods, particularly semi-structured interviews, the study revealed several key findings:

- Limited opportunities and time constraints for independent professional development
- Lack of or insufficient implementation of individual development plans
- Limited time for pedagogical professional development and innovation due to teacher workload

The research findings provide a basis for reflection and improvement in the programme offerings of the commissioning organisation, ensuring that its initiatives better align with the realities of the education system and the expectations of teachers.

9) Project Title: Cemetery Memory: Research and Documentation for the Sustainable Preservation of Sepulchral Monuments in the Former Sudetenland^[2]

Programme: NAKI II (Programme for Applied Research and Experimental Development of National and Cultural Identity, 2016–2022, Ministry of Culture of the Czech Republic)

Lead Institution: Faculty of Arts and Philosophy at UPCE

Principal Investigator: doc. PhDr. Pavel Panoch, Ph.D.

Project Duration: 2020–2022

The project aimed to develop and implement optimal tools (methodologies) for identifying, researching, documenting, and presenting sepulchral monuments, particularly underutilised or partially abandoned historic cemeteries that are currently at risk of disappearance or major alterations that could fundamentally change their essence.

The research focused on the former Sudetenland, i.e., the border regions of the Czech Republic, which experienced significant population and cultural discontinuity in the 20th century. Conducted in collaboration with the Faculty of Restoration at UPCE, the project resulted in the publication Pavel Panoch (ed.), *Hřbitovy zmizelých. Průvodce po sudetských hřbitovech východních Čech: Podkrkonoší (Cemeteries of the Vanished: A Guide to Sudeten Cemeteries in Eastern Bohemia – Podkrkonoší)*, University of Pardubice, 2022.

This collective work, based on field research and archival analysis, sheds light on a previously undocumented chapter of Czech-German coexistence in the Podkrkonoší region. The monograph contributes positively to restoring historical awareness of modern history in the border region and can serve as a teaching resource for humanities subjects in secondary schools.

10) Project Title: Architectural and Historical Survey of the Gates of the National Cultural Monument Vyšehrad

Commissioned by: National Cultural Monument Vyšehrad (Research Contract No. 998/23)

Principal Investigators: MgA. František Václavík, Mgr. Bohdan Šeda

Project Duration: 2023

This contracted research project was commissioned by the National Cultural Monument Vyšehrad under the Framework Agreement (No. 999/23) between the Faculty of Arts and Philosophy at UPCE and Vyšehrad National Cultural Monument, a municipal organisation under the City of Prague. The agreement primarily supports education, science, and research.

The project focused on independent architectural and historical surveys of the following structures within the Vyšehrad complex: Špička Gate, Táborská Gate, Leopold Gate, and Cihelná Gate. For the first time, these structures—spanning from the medieval period to the 19th century—were comprehensively assessed by experts.

The survey results serve as a prerequisite for securing national and European funding for restoration efforts and are a fundamental requirement of state heritage conservation authorities for planning the restoration and conservation of these structures.

HTML links to additional documentation:

[1] <https://ff.upce.cz/en/ff/research-projects>

[2] <https://starfos.tacr.cz/en/projekty/DG20P02OVV014>

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

Type of result ³⁰	Year of application	Name
Exhibition	2019-2022	From the Silver Czech Thaler to the Worldwide Dollar
Significant Analyses and Surveys	2020	Spatial Identification of the Underground Corridors of the Vyšehrad Casemates from the 17th–19th Century in Relation to Above-Ground Structures and Earthworks
Research Report	2020	Transformations of Public Spaces in Pardubice Housing Estates – Dubina/Polabiny
Significant Analyses and Surveys	2021	Spatial Identification and Documentation of the Building Complex of the So-Called Old Military Hospital in Jaroměř – Josefov No. 4 for the Purposes of a Structural and Historical Survey and a Structural and Technical Survey
Publication for the General Public	2022	POSLEDNÍ, Petr – KORÁBKOVÁ, Kateřina (eds.): <i>Shared Images: Three Decades of East Bohemian Literary Culture 1990–2020</i>
Catalogue	2022	Cemeteries of the Disappeared: A Guide to the Sudeten Cemeteries of Eastern Bohemia – Podkrkonoší
Significant Analyses and Surveys	2022	Structural and Historical Survey of the Former Cavalry Barracks, No. 3, on Parcel No. 48 in the Cadastral Area of Josefov in Jaroměř
Research Report	2023	Motivations and Barriers of Teachers to Further Professional Education
Research Report	2023	Innovative Approaches to Supporting At-Risk Families with Children in the Pardubice Region: Final Evaluation Report
Significant Analyses and Surveys	2023	Structural and Historical Survey of the Gates of the Vyšehrad National Cultural Monument

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:

Given that the primary focus of faculty members' activities is basic research, research results are most frequently transferred into practice when external entities express interest in applying them. The tertiary sector plays a central role in this regard. The financial resources for developing such outputs are typically obtained through basic research funding or contract research projects. The commercialisation of research outcomes has a limited impact on the faculty's budget, as the faculty leadership considers this activity part of the so-called third mission of universities. Consequently, the amount of funding obtained from non-public, non-grant sources was limited to CZK 90.000, which was used to finance editorial activities at the faculty.

Faculty members actively seek opportunities to apply their research findings in practice, particularly through collaboration with public administration bodies (e.g., the Ministry of Labour and Social Affairs), local governments, memory institutions, and non-governmental organisations. The most typical examples of research transfer into practice include:

- Preparation of expert materials for exhibitions
- Compilation of research reports documenting the historical development of architectural complexes, which are subsequently used as supporting materials for grant applications for building restoration funding
- Sociological studies addressing issues crucial for defining social and urban development strategies
- Development of methodologies to improve the reintegration strategies of at-risk groups, particularly children

In formulating its research transfer strategy, the Faculty of Arts and Philosophy at UPCE relies heavily on the involvement of Centre for Technology and Knowledge Transfer (CTKT), which coordinates and provides methodological guidance on the implementation of research outcomes into practice at the university-wide level. CTTZ has also established guidelines for the creation of spin-off companies within the faculty. However, given that the faculty's applied research is primarily utilised in tourism,

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.

public administration, the tertiary sector, and NGOs, no spin-off companies have been established to date. Furthermore, UPCE actively participates in regional innovation and development initiatives, with representation in:

- The Regional Innovation Council of the Pardubice Region
- The Steering Committee of the Hradec-Pardubice Agglomeration
- The Regional Standing Conference of the Pardubice Region

These platforms facilitate discussions on cooperation between UPCE and regional institutions, in line with the strategic development visions of individual university faculties.

1) Final Evaluation Report on the Implementation of Innovative Approaches to Supporting At-Risk Families with Children in the Pardubice Region

Project Title: *Innovative Approaches to Supporting At-Risk Families with Children in the Pardubice Region*

Programme: Operational Programme Employment Plus 2021–2027

Lead Institution: Pardubice Region

Faculty of Arts and Philosophy UPCE as a Consortium Partner (1 of 3)

UPCE Coordinator: Mgr. Adriana Sychrová, Ph.D.

Project Duration: 2020–2023

Although the findings presented in the final evaluation report are closely tied to the Czech context, they transcend regional boundaries and are considered transferable at the national level, with some aspects potentially applicable in international comparisons.

The report currently serves as a practical basis for systemic changes in the area of child protection and family support, both for the Pardubice Region and the Ministry of Labour and Social Affairs. It informs policy-making in child protection services, family support service design, and legal reforms. Impact evaluation results confirm that the new working methods introduced in OSPOD (Child Welfare Authorities) during the project have led to improved solutions for families in crisis as well as more effective cooperation between institutions and service providers within the child welfare system.

The supporting materials produced in the project have played a key role in shaping upcoming legislative changes at the national level. The Ministry of Labour and Social Affairs has incorporated references to project conclusions into draft legislation on child protection and family support. The project's contribution to legal, social, and caregiving practices was recognised with the Civil Servant Achievement of the Year award.

Additionally, the research has positively influenced gender equity by addressing the disproportionate social impact of family breakdowns on single mothers in the Czech Republic. The sustainability of project outcomes is ensured through a follow-up partnership project, Together for Supporting Families with Children in the Pardubice Region (2024–2027, OPZ MPSV), in which the Pardubice Region remains the lead institution, and faculty researchers continue to evaluate the programme's effectiveness.

2) Exhibition: From the Silver Czech Thaler to the Worldwide Dollar

As part of a long-term cooperation agreement, joint projects are carried out in collaboration with the East Bohemian Museum in Pardubice. One of these projects is a long-term initiative focusing on the presentation of the museum's numismatic collection (funded gradually from various sources), in which the Faculty of Arts and Philosophy at UPCE is represented by Prof. PhDr. Petr Vorel, CSc.

During the evaluation period (2019–2023), the international presentation of the travelling exhibition *Del Tálero de Plata Bohemio al Dólar Mundial* continued. This exhibition had two major openings:

- Mexico City, in the prestigious historical Casa de la Moneda (the Mexican Mint), in autumn 2019
- Zacatecas, a historic mining town, at the turn of 2019 and 2020

The French version of the exhibition, *Du thaler d'argent tchèque au dollar mondial – 500 ans d'histoire familiale du dollar*, was first opened in June 2019 in Strasbourg at the Council of Europe and later had two separate openings in Paris the same year.

Due to COVID-19 restrictions (2020–2021), international collaboration was temporarily suspended. As a result, efforts were redirected towards accelerating the preparation of a permanent numismatic exhibition at Pardubice Castle, titled *You Can't Take Money to the Grave* (December 2021). The exhibition's core theme, *From the Silver Czech Thaler to the Worldwide Dollar*, reflects the findings and materials from previous international exhibitions. The exhibition was designed and curated entirely by Prof. PhDr. Petr Vorel, CSc., who was responsible for its concept, script, and technical execution. As an exceptional applied research outcome, aimed at the widest possible audience, this exhibition was recognised with the national "Gloria musealis" award in 2022.

The Faculty of Arts and Philosophy at UPCE was also involved in the preparation of another travelling exhibition, *The Pernstein Women and Europe*, through the participation of doc. Pavel Marek, Ph.D. The exhibition was launched in 2019 at the Council of Europe headquarters in Strasbourg. In 2022, it was officially unveiled at the Czech Embassy in Berlin to commemorate the anniversary of the founding of Czechoslovakia, with the participation of Martin Netolický, Governor of the Pardubice Region. On 29 November 2022, the exhibition was featured as one of the cultural events marking the conclusion of the Czech Republic's EU Presidency in Brussels. The Spanish version of the exhibition was presented on 21 April at the Universidad Complutense in Madrid. The findings from this project have also been incorporated into the permanent museum exhibition at the East Bohemian Museum, ensuring long-term sustainability of the applied research outcomes.

3) Research Report: *Teachers' Motivation and Barriers to Further Professional Development*

Commissioned by: Elixír do škol, z.s.

Principal Investigator: Mgr. Michaela Konopíková, Ph.D.

Research Year: 2023

This research report was included in a strategic revision of the approach to developing new teaching methods in physics, chemistry, and digital technologies within the non-profit organisation Elixír do škol, z. ú. The findings were particularly valuable in shaping and refining the organisation's programme offerings, ensuring they effectively respond to the realities of the Czech education system and meet the expectations of teachers at primary and secondary schools nationwide.

4) Research Report: *Spatial Identification and Documentation of the Former Military Hospital Complex in Jaroměř – Josefov (Building No. 4) for the Purpose of Architectural and Structural Research*

Commissioned by: Town of Jaroměř (Research Contract No. 1018/21)

Principal Investigators: MgA. František Václavík, Mgr. Bohdan Šeda

Project Duration: 2021

The final comprehensive report on the architectural and historical research serves as a key reference document for the pre-project and project planning phases of the renovation and adaptation of the examined buildings. These activities are being carried out as part of a funding programme supported by EU structural funds.

The documentation also provides a fundamental information base for building permitting processes and preparation of architectural studies for the future use of the buildings. The primary user of this research is the Town of Jaroměř, but the findings are also utilised by public administration authorities with delegated powers as well as legal entities and private organisations involved in subsequent project documentation development.

5) Research Report: *Architectural and Historical Survey of the Gates of the National Cultural Monument Vyšehrad*

Commissioned by: National Cultural Monument Vyšehrad (Research Contract No. 998/23)

Principal Investigators: MgA. František Václavík, Mgr. Bohdan Šeda

Project Duration: 2023

The report on the architectural and historical survey serves as a prerequisite for securing national and European funding grants and is a fundamental requirement of state heritage conservation authorities for planning the restoration of the site.

This research was commissioned by the National Cultural Monument Vyšehrad under the Framework Agreement (No. 999/23) between the Faculty of Arts and Philosophy at UPCE and Vyšehrad National Cultural Monument, a municipal organisation under the City of Prague, focusing on education, science, and research.

The project involved independent architectural and historical surveys of the following structures within the Vyšehrad complex: Špička Gate, Tábořská Gate, Leopold Gate, and Cihelná Gate. For the first time, these structures—spanning from the medieval period to the 19th century—were comprehensively assessed by experts.

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
Financial Donations			70 / 2 767	20 / 791	20 / 791
Total			70 / 2 767	20 / 791	20 / 791

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 staff of the Faculty of Arts and Philosophy at UPCE actively engage in communicating the outcomes of their research activities and respond flexibly to societal needs in science outreach. These activities can be divided into two main categories:

- Public engagement initiatives organised directly by the faculty or its staff
- Participation in outreach activities via external communication platforms and strategies

The first category primarily includes the long-term series of public lectures systematically made available through the University of Leisure at the Faculty of Arts and Philosophy. This consists of two-semester thematic lecture blocks, each comprising 13 sessions per semester, with content that is regularly updated. Attendance consistently reaches 140–150 participants per session.

Another major platform is Café Universitas, which presents the latest research findings through public lectures held in an open setting (Divadlo 29). Other faculty-led outreach initiatives include:

- Sociocon – a platform for presenting research conducted by students and faculty from the Department of Social and Cultural Anthropology, part of the annual Multicultural Week in Pardubice
- LitCon – a regular showcase of creative activities from the Department of Literary Culture

Additionally, blogs, university and faculty podcasts (*Philosophy Voiced*), and participation in events such as Researchers' Night and the Sports Park play a vital role in outreach efforts.^[1] A significant societal impact is also achieved through regularly organised conferences on resocialisation pedagogy, which connect FF UPCE researchers with public administration officials, social care workers, law enforcement, and the broader public. Further high-impact outreach activities are carried out by the Department of Literary Culture, whose members contribute to regional literary development through organising public literary readings, editing literary anthologies, and structuring the literary scene in the Pardubice region.

The faculty also provides lifelong learning opportunities through:

- University of Leisure
- Supplementary Pedagogical Studies
- Additional Didactics Training for English Language Teachers

These educational activities consistently attract considerable public interest, with full enrolment capacity every year.

The second category of outreach activities primarily involves:

- Media engagement and science popularisation via national outlets, particularly broadcast and podcast platforms
- Regular invitations for faculty experts to specialised programmes on Czech Television and Czech Radio
- Participation in high-impact domestic and international podcast series

- Contributions to the development of specialised cultural and popular science programmes (e.g., *Akcent*, *Vizitka*)

These media engagements are typically linked to research dissemination efforts, with collaboration between faculty researchers and media producers helping to translate research findings into accessible formats for the general public.

Finally, public exhibitions, often with international impact, play a crucial role in research outreach – a notable example being the *Hello, Armenia!* exhibition.

Selected Examples of Public Engagement and Outreach Activities

1) University of Lifelong Learning at the Faculty of Arts and Philosophy at UPCE^[2]

All departments of the faculty participate in delivering the University of Lifelong Learning (UVČ) programme, with specific contributions depending on the current thematic cycle. The programme has been running for many years and introduces the public to the development of human civilisation from antiquity to the present day through annual lecture series.

Recent thematic cycles include:

- *People and the City* (2024–2025)
- *The Anglo-Saxon World* (2023–2024)
- *The Slavic World* (2022–2023)
- *The Germanic World* (2021–2022)
- *The Romance World* (2019–2020)

This broad thematic scope allows for the presentation of all humanities disciplines taught at the Faculty of Arts and Philosophy. Each year, the lecture series attracts 140–150 attendees, demonstrating the sustained public interest in and the high quality of science outreach at FF UPCE.

2) Faculty Members' Contributions to Czech Television, Czech Radio, and Other Broadcast, TV, and Podcast Platforms (Including International Outlets)

Doc. Laura Candiottio, Ph.D.

- *Emotion and Intelligence*, interview with Mike Livermore, podcast (2021)
- *Conversations at ESRI*, discussion with Luc Steel on Sentience and AI, podcast (2023)
- *Loving Nature*, interview with Mike Livermore, podcast (2023)

Prof. Mgr. Martin Čapský, Ph.D.

- Czech Television – "The Opavian Přemyslids – The Very Last Ones", part of the *Historie.cs* documentary series (2022)

Mgr. Vladan Hanulík, Ph.D.

- Czech Television – Accompanying web content for the TV series *Božena Němcová* (2020)
- Czech Television – "To the Spa We Go", part of the *Historie.cs* series (2020)
- Czech Radio, Radio Wave – "Man Up: Raising Boys to Be Tough Men" (2021)
- Czech Radio Plus – "The History of Hysteria" (2022)

Prof. PhDr. Milena Lenderová, CSc.

- Czech Radio Vltava – "Education and Literacy in the Lands of the Bohemian Crown", a historical overview of Czech teachers, students, school laws, reforms, and institutions (2021)

- Czech Television – "To Have a Different Body", part of the *Historie.cs* series (2021)
- Czech Television – "A New Life Is Born", part of the *Historie.cs* series (2023)
- Czech Radio 2 – "Fateful Women: Zdenka Braunerová" (2023)
- Czech Radio Vltava – "The Life and Career of Milena Lenderová", a five-part series (2023)

Doc. Mgr. Pavel Marek, Ph.D.

- Czech Television – "Good Morning", segment on *The Genetics of the Habsburgs* (2019)
- Czech Radio Vltava – "The Land of the Pernštejns" (2021)
- El Puzzle Voynich, a podcast on *The Most Mysterious Book in the World*, produced by Cadena SER, a Spanish radio network (2023)

Mgr. Kamila Pacovská, Ph.D.

- *Virtue Ethics*, interview for **Czech Radio Vltava** (2019)

Doc. Mgr. Pavel Panoch, Ph.D.

- Screenwriting and expert commentary for the radio documentary series "The Most Famous Villas and Family Homes of the Pardubice Region", broadcast on Czech Radio Region – Pardubice, consisting of 24 episodes (2023)

3) Exhibition "Hello, Armenia"

This exhibition was organised to mark the 30th anniversary of diplomatic relations between the Czech Republic and Armenia and was held at the Clementinum in Prague from 4 April to 16 May 2023. The Institute of Historical Sciences at UPCE was one of the co-organisers and contributed to the exhibition's script and design, which included 12 posters and two display cases. The exhibition showcased the results of collaboration between the Institute of Historical Sciences at UPCE and the Institute of Archaeology and Ethnography of the National Academy of Sciences of the Republic of Armenia in Yerevan (2021–2023). The research focused on the archaeological context of the prehistoric and medieval site of Areni-1 Cave.

The exhibition was accompanied by two public lectures:

- *Armenian Heritage and Its Documentation: The "Apostolus" and "Hayastan" Projects*
- *Areni-1 Cave in Armenia and the Beginnings of Winemaking: Survey and Archaeological Research in the Cave and Its Surroundings*

4) Philosophy Voiced – Podcast^[3] and Blog^[4] of the Centre for Ethics at FAP UPCE

The Philosophy Voiced podcast, produced by the Centre for Ethics, features interviews with guest lecturers and faculty members, covering various topics in philosophy and ethics. The podcast is primarily aimed at an international audience, and since all discussions are conducted in English, it also serves as a tool for attracting prospective students to the faculty's English-language master's and doctoral programmes in philosophy.

In addition, the Centre for Ethics' blog publishes concise, engaging, and accessible essays for the general public. These contributions typically offer philosophical reflections on contemporary social issues.

5) Universitas Café^[5] and "Tea at Five"^[6]

Universitas Café is a series of public lectures and discussions in which academics address socially relevant topics. These events, held at Divadlo 29 in Pardubice, are organised by doctoral students

from FF UPCE at regular intervals. The primary aim is to make current scientific findings accessible to the wider public through interactive and discussion-oriented lectures.

"Tea at Five" is another discussion platform, launched by FF UPCE in 2023. It featured interviews with media personalities, held in the university's assembly hall, with the goal of introducing the broader public to the academic environment. The main organiser, Michal Němeček, was subsequently awarded the UPCE Rector's Prize in 2024 for his contributions to science communication and public engagement.

6) Conference (2023) and Three Roundtable Discussions (2020, 2022, 2023) in the Series "Current Issues in Resocialisation Pedagogy VI.: The Child in Criminal Proceedings (The Child as an Offender)" ^[7]

This expert panel discussion focused on the issue of children as offenders in the criminal justice system. Participants included representatives from the Regional Public Prosecutor's Office, the Regional Judiciary, the Police of the Czech Republic, leading figures from the Probation and Mediation Service, officials responsible for child protection services, and members of the legal profession.

By involving key professionals in the child protection and juvenile justice system, the conference helped disseminate research findings from the project *Innovative Approaches to Supporting At-Risk Families with Children in the Pardubice Region*. This extended the practical impact of the project and reinforced its contribution to the broader system of child protection and social work.

7) Series of Radio Programmes: "Radio Advisory" on Czech Radio Hradec Králové – Children's Psychology

Zdeněk Čermák from the Department of Education at FF UPCE created a series of educational radio programmes addressing key psychological topics related to children, such as child sexuality, psychological fraud, self-harm, shared custody, and eating disorders.

The programme responded to some of the most pressing questions concerning children's socialisation. These issues had been previously explored at an expert level within the research project *Innovative Approaches to Supporting At-Risk Families with Children in the Pardubice Region*. The radio series played a crucial role in disseminating the research findings to the wider public.

8) Production of "Akcent" and "Vizitka" Programmes on Czech Radio Vltava

PhDr. Petr Šrámek, Ph.D., contributed to the development and production of literary and historical programmes for Czech Radio Vltava between 2019 and 2021, specifically for the "Akcent" and "Vizitka" series.

- Akcent (2020, 11 episodes, 30 minutes each) covered topics such as: *Milan Kundera, Literature and Film, Typography Textbooks, The Nobel Prize (Glück), Literary Experiment and Nazism, Comenius, Erben, Poetry and Exile, Chinese Novels*
- Vizitka (2019–2020, 22 episodes, one-hour interviews) featured guests such as: Martin Ryšavý, Petra Soukupová, Martin Bedřich, Radka Denemarková, Ladislav Nagy, Zuzana Augustová, Marek Šindekla, Jiří Pelán, Martin Janeček, Iva Procházková, Petr Eliáš, Miloš Urban, Emil Hakl, Tomáš Dimter, Jan Němec, Jiří Hájíček, Ivan Matoušek, Jakub Hlaváček, Pavel Kořínek, Petra Dvořáková, Jakub Řehák, Ondřej Buddeus

9) "The Year of Vilém of Pernštejn" (2021)

The Pardubice Region, the Institute of Historical Sciences at FF UPCE, the City of Pardubice and its cultural institutions, the National Heritage Institute (represented by Kunětická Hora Castle, Litomyšl)

Chateau, and the Regional Heritage Office in Pardubice), and other partners jointly organised the project *500 Years of the Renaissance in Eastern Bohemia* to mark the anniversary of Vilém of Pernštejn's death.

This project aimed to highlight the legacy of the Pernštejn family in the Pardubice Region. The Institute of Historical Sciences at FF UPCE contributed by popularising and presenting the latest research findings on cultural heritage through publications and lectures. The initiative was rolled out gradually across the entire Pardubice Region, making historical knowledge more accessible to the public.

10) Activities by the Department of Education to Enhance the Impact of Resocialisation Pedagogy

The Department of Education at FF UPCE has actively applied its research and expertise to increase the effectiveness of resocialisation pedagogy, particularly in response to pressing social challenges. Key activities include:

- Consultations on the migration crisis linked to the war in Ukraine – collaboration with the Regional Assistance Centre for Ukrainians (KACPU) and the Pardubice Regional Authority (2022).
- "Around the World" – An annual programme as part of Multicultural Week to support the integration of foreign nationals in the Czech Republic and raise awareness among primary and secondary school students about multicultural coexistence.
- Regular production of educational materials (manuals and publications) aimed at raising awareness and preventing societal issues and various forms of risky behaviour among primary and secondary school students:
 - *Everyone Has Their Own Addiction* (2022)
 - *Always with a Helmet* – a brochure on sex education (2021)
 - *Leisure Activities for Primary School Pupils in Pardubice* (2020)
 - *The Benefits of Sport for Every Child and Parent* (2019)

Creation of the website "Therapeutic Parenting" in collaboration with the non-profit organisation Vesta Pardubice, z.s. (2023). This website serves as the only comprehensive information platform on therapeutic parenting in the Czech Republic.

HTML links to additional documentation:

- [1] <https://ff.upce.cz/en/ff/science-popularization>
- [2] <https://ff.upce.cz/en/ff/university-of-lifelong-learning-202425>
- [3] <https://centreforethics.upce.cz/en/philosophy-voiced>
- [4] <https://centreforethics.upce.cz/en/blog>
- [5] <https://ff.upce.cz/ff/cafe-universitas>
- [6] <https://ff.upce.cz/en/ff/science-popularization>
- [7] <https://ff.upce.cz/en/ff/conference>

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, the **International Evaluation Panel (IEP) recommended:**

- a) developing the potential for the applicability of research findings, particularly through collaboration with other faculties within the University,
- b) leveraging cooperation with non-university institutions that could enhance funding from both national and international external sources,
- c) initiating collaboration with private sector entities and setting a strategy for directing applied research.

The evaluation also highlighted:

- d) the Faculty's lack of economic impact on society, except for the development of tourism potential in selected areas.

Further recommendations included:

- e) strengthening networking and cooperation with non-university institutions, and
- f) addressing the absence of support for the commercialisation potential of research and the systematic support of technology transfer and intellectual property.

The **recommendations from the final IEP evaluation were addressed** through two types of responses:

- Amendments to FAP's internal regulations,
- Changes in the strategy of individual departments.

The Faculty responded to the specific observations as follows:

Ad a) The Faculty of Arts and Philosophy established interfaculty collaborations, particularly with the Faculty of Electrical Engineering and Informatics at UPCE in the field of AI research (a proposed joint OP JAK project is currently under evaluation), with the Faculty of Restoration at UPCE on projects focusing on tangible historical heritage (*Memory of Cemeteries: Survey and Documentation for Sustainable Care of Sepulchral Monuments in the Former Sudetenland*), with the Faculty of Transport Engineering on the historical architectural research of the Josefov Fortress, and with the Faculty of Economics and Administration at UPCE in sociologically oriented research on public spaces and the organisation of the *Society and Its Governance* conference series, which explores interdisciplinary perspectives on contemporary societal transformations.

Ad b) The Faculty has established or strengthened cooperation with both domestic and international partner institutions. Experts from the Institute of History of the Czech Academy of Sciences participate in research projects led by the Institute of Historical Sciences at FAP UPCE (e.g., *Zbyněk Vydra's project Russian Radical Right in Exile, 1918–1945*). Similarly, researchers from the Institute of Philosophy of the Czech Academy of Sciences, Masaryk University, the Faculty of Law at Masaryk University, and other institutions are engaged in the *Beyond Security: Role of Conflict in Resilience-Building* project coordinated by the Centre for Ethics at FAP UPCE. These projects enable strong interdisciplinary collaboration among excellent research institutions, significantly contributing to the Faculty's recognition within both national and international academic communities. In this context, it is essential to note that FAP UPCE is becoming a target institution

for international researchers applying for prestigious funding from EU-supported programmes such as the *Marie Skłodowska-Curie Individual Fellowships (MSCA IF)*.

Ad c) In cooperation with the Centre for Technology and Knowledge Transfer (CTKT), strategies for the commercialisation of research conducted by FAP UPCE staff have been consulted. In this regard, contractual research activities have been conducted for the benefit of municipal and governmental bodies. The Faculty's role has primarily involved expert analyses, which serve as fundamental components for the implementation of financial measures—most frequently in the fields of historical architectural research and sociological studies. However, direct collaboration with private sector partners has also been initiated. Within the *Innovative Approaches to Supporting At-Risk Families with Children in the Pardubice Region (2020–2023)* project, cooperation was successfully established between three entities: the private company Gov Lab, s.r.o., the regional government represented by the Pardubice Region, and FAP UPCE as the expert partner of the entire project.

Ad d) While FAP researchers do not engage in industrial research, their contribution to experimental research with clear societal impact extends beyond the tourism sector, which naturally presents itself as the primary application area for research outcomes. Research teams have demonstrated the critical role of expert analyses in the development of the Czech Republic. In this regard, the *Innovative Approaches to Supporting At-Risk Families with Children in the Pardubice Region* project stands out. The implementation of research findings into legislative changes and practical measures for assisting children and families in social distress has the potential to generate significant financial benefits—not only for the Pardubice Region, where, according to responsible authorities, social services have significantly improved as a result, but also for the Czech Republic as a whole. Similarly, expert analyses from historical architectural research will contribute to the development of sustainable economies in the Jaroměř area and other locations that will benefit from research conclusions through financial grants for reconstruction and strengthening community resilience in socially disadvantaged regions.

Ad e) Several initiatives have been undertaken in this regard, leading to an increase in joint research projects (see Ad b). Moreover, direct cooperation with research institutions has intensified through participation in *Blended Intensive Programmes (BIP) Erasmus* projects with partner institutions such as the University of Mannheim, the University of Reims, the University of Wrocław, the Jagiellonian University in Kraków, the University of Ljubljana, and others. FAP UPCE has become a hub where both international and domestic researchers submit joint consortium applications for funding from international collaborative programme calls, leading, for instance, to the realisation of the ERC CZ project *Combating Self-Righteousness* by John Lippitt.

Ad f) In response to the lack of structures and strategies for commercialising research results and protecting intellectual property, FAP has established strong connections with the University-wide coordinating *Centre for Technology and Knowledge Transfer (CTKT)*. Regular consultations take place at meetings of vice-deans for research and creative activities with the respective pro-rector and CTKT representatives to discuss potential strategies for securing external partners and financial opportunities beyond project-based funding. As a result, the *Laboratory for Documentation and Non-Destructive Research* was established, specialising in contractual research projects in historical architectural research for external clients (see Table 3.3.2). In 2023, FAP UPCE also became involved in the preparatory phase of the *Pardubice Research and Innovation Centre* project, which, in collaboration with the private company *P-PINK* and the *Pardubice Region*, aims to support the development of technology and start-ups focusing on circular economy and AI applications.

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)
The Statues of the Faculty of Arts and Philosophy, University of Pardubice	3.1	https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M3%20Faculty%20of%20Arts%20and%20Philosophy
Strategic Plan of the Faculty of Arts and Philosophy, University of Pardubice	3.1	https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M3%20Faculty%20of%20Arts%20and%20Philosophy
Directive No. 2/2022 - Principles of resource allocation for LCDSO and for educational and other activities at FAP UPCE	3.1	Directive No. 2 2022 Principles of resource allocation for LCDSO.pdf
Results of the National Evaluation of Research Organisations According to the 2017+ Methodology (2019–2023)	3.1	https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M3%20Faculty%20of%20Arts%20and%20Philosophy
University of Lifelong Learning at the Faculty of Arts and Philosophy, University of Pardubice	3.1	https://ff.upce.cz/en/ff/university-of-lifelong-learning-202425
Follow-Up Master's Programme in English: Ethics and Political Philosophy	3.1	https://ff.upce.cz/en/ff/ethics-and-political-philosophy
Supplementary Pedagogical Studies Offered to the Public by the Faculty of Arts and Philosophy	3.1	https://ff.upce.cz/en/ff/postgraduate-teaching-qualification-program-ptqp
Additional Didactics Course in English Language Teaching Offered to the Public by the Faculty of Arts and Philosophy	3.1	https://ff.upce.cz/en/ff/pedagogical-qualification-program-for-english-language-teaching
Society and Its Governance – A Regular Conference Organised in Interfaculty Cooperation Between the Faculty of Arts and Philosophy and the Faculty of Economics and Administration	3.1	https://ff.upce.cz/en/ff/conference
Principles of resource allocation for LCDSO	3.1	https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M3%20Faculty%20of%20Arts%20and%20Philosophy
Centre for Ethics	3.1	https://centreforethics.upce.cz/en
Scientific Teams	3.1	https://ff.upce.cz/en/ff/scientific-teams
Awarding of Outstanding Outcomes in Research	3.2	https://ff.upce.cz/en/ff/research-awards
Project: ERC CZ Combatting Self-Righteousness: a Vice of the Digital Age	3.2	https://centreforethics.upce.cz/en/self-righteousness
Project: Centre for Ethics as Study in Human Value	3.3	https://centreforethics.upce.cz/en/centre-ethics-study-human-value
Project: Representation and Practice of Social Control in Late Medieval Urban Communities	3.3	https://starfos.tacr.cz/en/projekty/GA20-11247S
Project: German Responses to Uncertainty in International Relations: Germans and Europe Between Codified Law and the Law of the Strong (1839–1853)	3.3	https://starfos.tacr.cz/en/projekty/GA21-02257S
Project: Sovereign's Debt and State Bankruptcy of 1615 in the Kingdom of Bohemia (Economic Context of the Outbreak of the 'Bohemian War' in 1618)	3.3	https://starfos.tacr.cz/en/projekty/GA22-11931S?query=3jgqaadbeh3a
Project: Russian Radical Right in Exile, 1918–1945	3.3	https://starfos.tacr.cz/en/projekty/GA20-09721S?query=6wxaadczitq
Project: "ECEGADMAT". A Bad Feeling About Climate and Its Various Forms	3.3	https://starfos.tacr.cz/en/projekty/GA22-15446S?query=zxriac6ttwq

Project: Moral Impossibility: Rethinking Choice and Conflict	3.3	https://cordis.europa.eu/project/id/101026701
Project: Philosophy as Cultural Self-Knowledge: R. G. Collingwood, Peter Winch and the Human Sciences	3.3	https://cordis.europa.eu/project/id/101026669
Project: Escape into Nature: Consolatory Interactions with the Natural World in Contemporary Literature and Culture	3.3	https://ff.upce.cz/en/projekt/1042198
Project: Beyond Security: Role of Conflict in Resilience-Building	3.3	https://ff.upce.cz/en/ff/beyond-security-role-of-conflict-in-resilience-building
Project: Innovative Approaches to Supporting At-Risk Families with Children in the Pardubice Region	3..4	https://ff.upce.cz/en/ff/research-projects
Project: Cemetery Memory: Research and Documentation for Sustainable Care of Sepulchral Monuments in the Former Sudetenland	3.4	https://starfos.tacr.cz/en/projekty/DG20P02OVV014
Podcast Philosophy Voiced	3.6	https://centreforethics.upce.cz/en/philosophy-voiced
Centre for Ethics Blog	3.6	https://centreforethics.upce.cz/en/blog
Tea at Five – University of Pardubice Discussion Platform for Prominent Figures	3.6	https://ff.upce.cz/en/ff/science-popularization
Café Universitas – University of Pardubice Discussion and Lecture Platform for Presenting Scientific Results	3.6	https://ff.upce.cz/ff/cafe-universitas
Annual Conference: The Child in Criminal Proceedings	3.6	https://ff.upce.cz/en/ff/conference
European Researchers' Night at the University of Pardubice	3.6	https://ff.upce.cz/en/ff/science-popularization
University of Lifelong Learning at the Faculty of Arts and Philosophy, University of Pardubice	3.6	https://ff.upce.cz/en/ff/university-of-lifelong-learning-202425

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: Faculty of Chemical Technology (FChT)

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:

FChT is the oldest faculty of the University of Pardubice, boasting a seventy-five-year tradition of teaching and scientific research^{[1][2][3]}. Its long-term mission in research, development, and innovation (R&D&I) is to generate internationally relevant outcomes and facilitate their effective transfer to industry. The faculty's expertise spans chemical disciplines, materials engineering, and biological as well as chemical-biological fields.

R&D&I activities are primarily conducted within the following **FORD** disciplines:

1. **Natural Sciences** (approximately 59%, basic research),
2. **Engineering and Technology** (approximately 38%, basic research), complemented by:
3. **Medical and Health Sciences** (approximately 1.4%, basic research),
4. **Agricultural and Veterinary Sciences** (approximately 0.2%, basic research),
5. **Social Sciences** (approximately 2%, applied research).

In basic research, FChT has built on its significant achievements from the previous evaluation period, maintaining a strong reputation both nationally and internationally. During the assessment period, the faculty further reinforced its research excellence, securing prestigious R&D&I projects such as the ERC Advanced Grant (Principal Investigator: Prof. Ing. Michal Holčápek, Ph.D.)^[4] and the ERC Starting Grant (Principal Investigator: Dr.-Ing. Jan Macák)^[5], as well as actively participating in Horizon Europe and Horizon 2020 projects.

In applied research, FChT actively collaborates with industry in the Czech Republic while also achieving internationally recognised outcomes and successfully transferring them into practice. Notable examples include securing multiple foreign patents (USA, EU, Japan) and establishing the

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

spin-off company Lipidica^[6]. The faculty has also played a key role in numerous basic and applied research projects. Based on the number of secured projects, the ratio of basic to applied research is approximately 2:1, while in terms of financial resources obtained during the evaluation period, the ratio stands at approximately 3.5:1.

Organisational Structure and Staffing

The organisational structure of FChT consists of twelve institutes/departments and two faculty centres – the Centre for Materials and Nanotechnology and the University Environmental Centre. In terms of personnel, FChT is a stable unit with an average full-time equivalent (FTE) staff of approximately 260 over the evaluation period, with nearly 50% female representation (Table 3.1.1). Of this total:

- 63% are academic staff,
- 24% are research staff,
- 13% are other employees involved in R&D&I.

The proportion of early-career researchers is approximately 20%. Among academic staff, the distribution of professional positions remained stable throughout the evaluation period:

- 2.5% assistants,
- 51% assistant professors,
- 25.5% associate professors,
- 21% professors.

The most represented age group at both the beginning and end of the evaluation period was 40–49 years, for both men and women.

Study Programmes and Student Profile

FChT offers study programmes at all three levels – bachelor's, master's, and doctoral studies, with a predominantly academic orientation.

- Bachelor's programmes are delivered in Czech.
- Two master's programmes are accredited in English.
- At the doctoral level, the ratio of Czech to English programmes is approximately 1.4:1.

Additionally, FChT has offered four lifelong learning courses.

During the evaluation period, over 6,000 students were enrolled across all study levels, with approximately 64% female representation. The distribution of students by study level is as follows:

- 65% bachelor's students,
- 21% master's students,
- 11% doctoral students,
- the remainder enrolled in lifelong learning courses.

Student numbers gradually declined over the evaluation period, but the proportion of women and the distribution across study levels remained relatively stable.

HTML links to additional documentation:

[1] <https://fcht.upce.cz/en>

[2] https://fcht.upce.cz/sites/default/files/global/2024-02/7151/Statut%20FChT%2001%2001%2024%20-%20fin-Aj-fin_92343.pdf

[3] <https://fcht.upce.cz/en/fcht/annual-reports>

[4] <https://cordis.europa.eu/project/id/101095860>

[5] <https://cordis.europa.eu/project/id/638857>

[6] <https://www.lipidica.com/>

Table 3.1.1 - Staffing per FTE²

Academic/ Professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	36.12 / 5.40	35.06 / 5.41	35.67 / 5.40	35.01 / 5.40	31.04 / 4.41	172.91 / 26.02
Associate Professor	42.74 / 12.33	45.15 / 13.50	43.38 / 13.30	42.40 / 13.26	38.68 / 12.50	212.34 / 64.89
Assistant Professor	84.80 / 33.59	85.44 / 34.07	86.96 / 36.08	88.25 / 37.55	77.53 / 32.62	422.99 / 173.90
Assistant	5.67 / 1.72	5.17 / 1.25	3.93 / 2.01	4.02 / 3.02	3.09 / 2.29	21.87 / 10.30
R&D Personnel ³	11.1 / 10.5	11.1 / 10.5	11.1 / 10.5	11.1 / 10.5	11.1 / 10.5	55.5 / 52.5
Researchers in other categories ⁴	60.39 / 22.00	64.72 / 26.12	70.52 / 28.49	68.43 / 28.49	58.00 / 23.63	322.05 / 128.73
Technical and economic staff ⁵	23.58 / 16.93	23.92 / 17.98	23.13 / 17.27	22.43 / 16.54	18.22 / 13.53	111.28 / 82.22
Scientific, research and development staff involved in teaching activities	91.98 / 28.81	92.79 / 29.46	92.31 / 30.85	92.17 / 32.17	81.67 / 28.15	450.93 / 149.44
Early career researchers ⁶	51.68 / 14.87	54.48 / 17.98	57.76 / 21.38	56.09 / 23.72	45.20 / 17.75	265.21 / 95.7
Total ⁷	264.4 / 102.47	270.56 / 108.83	274.69 / 113.05	271.64 / 114.76	237.66 / 127.63	1318.94 / 687.97

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					10	1	9	2	11	2	10	1
Associate Professor			2		24	10	8	3	9	1	4	
Assistant Professor			27	5	43	19	10	7	6	2		
Assistant	2		6	3					1			
R&D Personnel ⁹			1	1	4	4	4	4	1	1		
Researchers in other categories ¹⁰	18	8	31	12	13	4	4	2	2	1	2	
Technical and economic staff ¹¹			3	3	9	7	9	7	2	1	1	
Scientific, research and development staff involved in teaching activities	1		18	4	42	16	15	7	15	3	8	1
Early career researcher ¹²	14	5	42	11								
Total ¹³	20	8	75	28	115	56	55	35	35	10	19	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.

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					6		14	4	11	1	5	1
Associate Professor			2		23	8	11	3	6	2	3	
Assistant Professor	1	1	20	6	41	19	19	9	4	2	1	
Assistant			4	2	2	1						
R&D Personnel ¹⁵			1	1	4	4	4	4	1	1		
Researchers in other categories ¹⁶	6	2	34	14	16	5	4	3	3	2	1	
Technical and economic staff ¹⁷			2	2	7	6	10	8	3	2	1	
Scientific, research and development staff involved in teaching activities	1	1	14	4	39	15	24	9	11	3	4	1
Early career researcher ¹⁸	7	3	44	17								
Total ¹⁹	7	3	66	28	108	51	75	44	33	13	13	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.

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	932	646	888	607	843	564	725	500	677	470	4065	2787
Master's ²⁰	283	185	269	176	271	183	265	171	250	150	1338	865
Doctoral	144	79	134	63	134	62	140	70	139	68	691	342
Lifelong Learning Courses	32	7	57	11	32	5	34	3	25	3	180	29
Total	1391	917	1345	854	1278	813	1164	744	1091	691	6269	4019

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	15 / 0	0 / 0	18 / 0	0 / 0	16 / 0	0 / 0	14 / 0	1 / 0	12 / 0	1 / 0	18 / 0	1 / 0
Master's	9 / 1	1 / 0	18 / 1	1 / 0	17 / 0	1 / 0	17 / 1	1 / 0	16 / 2	1 / 0	21 / 2	1 / 0
Doctoral	8 / 6	0 / 0	16 / 6	0 / 0	18 / 7	0 / 0	19 / 11	0 / 0	18 / 10	0 / 0	19 / 14	0 / 0
Lifelong Learning courses	4 / 0	0 / 0	4 / 0	0 / 0	4 / 0	0 / 0	3 / 0	0 / 0	2 / 0	0 / 0	4 / 0	0 / 0
Total	36 / 7	1 / 0	56 / 7	1 / 0	55 / 7	1 / 0	53 / 12	2 / 0	48 / 12	2 / 0	62 / 16	2 / 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	0.35	Applied Research	58.56
	1.2 Computer and information sciences	0.30	Basic Research	
	1.3 Physical sciences	4.89	Basic Research	
	1.4 Chemical sciences	45.77	Basic Research	
	1.5 Earth and related environmental sciences	1.54	Basic Research	
	1.6 Biological sciences	5.51	Basic Research	
	1.7 Other natural sciences	0.2	Balanced basic and applied research	
2. Engineering and Technology	2.1 Civil engineering	0.06	Balanced basic and applied research	37.89
	2.2 Electrical engineering, Electronic engineering, Information engineering	0.63	Basic Research	
	2.3 Mechanical engineering	1.01	Basic Research	
	2.4 Chemical engineering	3.22	Basic Research	
	2.5 Materials engineering	24.04	Basic Research	
	2.6 Medical engineering	0.07	Balanced basic and applied research	
	2.7 Environmental engineering	2.56	Basic Research	
	2.8 Environmental biotechnology	0.32	Balanced basic and applied research	
	2.9 Industrial biotechnology	0.02	Basic Research	
	2.10 Nanotechnology	2.62	Basic Research	
	2.11 Other engineering and technologies	3.34	Basic Research	
3. Medical and Health Sciences	3.1 Basic medicine	1.03	Basic Research	1.38
	3.2 Clinical medicine	0.01	Applied Research	
	3.3 Health sciences	0.34	Applied Research	
4. Agricultural and veterinary sciences	4.1 Agriculture, Forestry, and Fisheries	0	Zvolte položku.	0.17
	4.2 Animal and Dairy science	0	Zvolte položku.	
	4.3 Veterinary science	0.12	Basic Research	
	4.4 Other agricultural sciences	0.05	Basic Research	
5. Social Sciences	5.1 Psychology and cognitive sciences	0	Zvolte položku.	2.00
	5.2 Economics and Business	1.65	Applied Research	
	5.3 Education	0.25	Balanced basic and applied research	
	5.4 Sociology	0.09	Applied Research	
	5.5 Law	0	Zvolte položku.	
	5.6 Political science	0	Zvolte položku.	
	5.7 Social and economic geography	0	Zvolte položku.	
	5.8 Media and communications	0.01	Basic Research	
	5.9 Other social sciences	0	Zvolte položku.	
6. Humanities and the Arts	6.1 History and Archaeology	0	Zvolte položku.	0
	6.2 Languages and Literature	0	Zvolte položku.	
	6.3 Philosophy, Ethics and Religion	0	Zvolte položku.	
	6.4 Arts (arts, history of arts, performing arts, music)	0	Zvolte položku.	
	6.5 Other Humanities and the Arts	0	Zvolte položku.	
Total		100 %	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:

Research activities at FChT primarily focus on high-quality basic and applied research. These activities are grounded in the chemical sciences and specialised fields unique to FChT, which have been continuously developed over the long term. The faculty has already demonstrated excellence in these areas, earning a strong reputation both nationally and internationally. Based on the research portfolio presented in Table 3.1.6, the most significant FORD disciplines at FChT are:

- 1.4 Chemical Sciences,
- 2.5 Materials Engineering,
- 1.6 Biological Sciences.

The faculty's core research units are its research groups within departments and institutes. Several excellent research teams in both basic and applied research have been identified and actively supported at FChT^[1]. During the evaluation period, nine academic staff members were recognised as outstanding researchers in basic research, four of whom (prof. Bureš, prof. Holčapek, Dr. Macák, and prof. Málek) were ranked among the top 2% of the world's most cited scientists in the Stanford's list^[2].

Among the most prestigious awards for scientific achievements is the Herbert J. Dutton Award, granted to Prof. Ing. Michal Holčapek, Ph.D., making him the first scientist from the Czech Republic to receive this honour^[3]. He was also recognised in the "Power List 2020 – Around the World in 60 Scientists or The Top 100 Most Influential People in Analytical Science."^[4]

FChT has also identified and supported excellent applied research teams since 2019, with five academic staff members representing this category. Among the prestigious awards in applied research, notable achievements include:

- TechConnect 2019 Innovation Award – awarded to Dr.-Ing. Jan Macák^[5],
- Visionary 2019 Award – for technological and societal contributions to smart technologies in healthcare, awarded to doc. Syrový,
- Top Innovation 2023 Award – awarded to the team of doc. Veselý and Prof. Jambor.

Significant R&D&I awards were also received by doctoral students during the evaluation period, including:

- Ing. Halenkovič, Ph.D. – 2019 Ministry of Education Award^[6],
- Ing. Edvin Wallace, Ph.D. – 2021 Komerční banka Award for Outstanding Dissertation,
- Ing. Barbora Kamenická, Ph.D. – Czech Head – Doctorandus Award for Technical Sciences 2023.

International Engagement and Editorial Activities

Numerous academic and research staff members serve on editorial boards of prestigious journals, including those ranked in the first quartile (Q1) and first decile (D1) according to AIS/FORD (selected examples are listed in Table 3.2.2). They frequently act as guest editors, editors of special issues, and hold other editorial roles. They are also active members of various professional societies and committees.

Notable memberships during the evaluation period include:

- Prof. Málek – member of the MŠMT Advisory Board for the Evaluation of Research Organisations in the Higher Education Sector (2020),
- National Councillor and Vice-President of the International Confederation for Calorimetry and Thermal Analysis (2019–2022) (since 2022, this role has been taken over by Ing. Barták),
- Prof. Holčapek (until 2023) and doc. Česla (since 2023) – National Representatives of the Czech Republic in the Central European Group for Separation Science,
- Prof. Růžicka – member of the Learned Society of the Czech Republic.

A substantial number of FChT's academic and research staff members are regularly invited to deliver lectures at international symposia and institutions, including world-renowned universities such as Cambridge University and the University of Arizona, as well as leading research centres. Examples include:

- National Institute for Materials Science, Tsukuba, Japan (Prof. Málek and Prof. Čapek in 2023, Prof. Němec in 2021).

FChT staff also serve on permanent scientific committees of major international symposia, including:

- Prof. Holčapek – member of the Permanent Scientific Committee of the International Symposium on Chromatography (ISC),
- doc. Česla – member of the Permanent Scientific Committee of the International Symposium on Separation Sciences (ISSS),
- Prof. Wágner – member of the International Advisory Board of the European Conference on Solid State Chemistry.

During the evaluation period, FChT staff members were involved in organising numerous international conferences, including:

- Prof. Růžicka – organiser of the 13th International Conference on Heteroatom Chemistry (Prague, 2019), co-chairman of the 29th International Conference on Organometallic Chemistry (Prague, 2022),
- Prof. Drašar – co-chairman of the 19th European Conference on Thermoelectrics (Prague, 2023),
- Prof. Wágner – organiser of the 18th European Conference on Solid State Chemistry (Prague, 2023).

Dissemination of R&D&I Knowledge

The dissemination of cutting-edge R&D&I findings at FChT is strongly supported through lectures by international scientists and experts. A selection of the most prominent speakers during the evaluation period is provided in Table 3.2.4. These speakers are leading experts with an outstanding international reputation and cover the main FORD disciplines within FChT's research portfolio. The H-index of these scientists ranges from 39 to 93.

A particularly notable event was the lecture delivered at FChT by Professor Jean-Marie Lehn, the 1987 Nobel Laureate in Chemistry.

Participation in Research Funding Institutions and Evaluation Panels

FChT staff members also hold positions in various R&D&I funding institutions, expert evaluation panels, and other bodies. These include:

- Grant Agency of the Czech Republic (GAČR) expert panels, such as:
 - Prof. Bulánek – Panel P106 (2021–2023),
 - Prof. Drašar – Vice-Chairman of Panel P204 (2021–2023),
 - Dr. Macák – Chairman/Vice-Chairman of Panel P106 (2019–2022),
 - Prof. Němec – Panel P108 (2019–2021),
 - Prof. Holčápek – Chairman of Panel P206 (since 2023),
 - Prof. Wágner – Panel P204 (2019–2023),
 - Ing. Krbal – Panel P108 (2023),
 - Prof. Růžička – Panel P207 (2023).

FChT staff members regularly participate in the evaluation of national and international R&D&I projects, including projects funded by the European Research Council (ERC) and bilateral INTER-ACTION projects (MŠMT), among others.

HTML links to additional documentation:

- [1] <https://fcht.upce.cz/en/fcht/science-and-research-at-the-faculty-of-chemical-technology>
- [2a] <https://www.upce.cz/en/university-of-pardubice-scientists-among-the-most-cited-in-the-world>
- [2b] <https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/6>
- [3] <https://www.upce.cz/en/scientist-michal-holcapek-receives-the-herbert-j-dutton-award-in-the-usa>
- [4] <https://theanalyticalscientist.com/power-list/2020>
- [5] <https://www.techconnectworld.com/World2019/participate/innovation/awards.html>
- [6] <https://fcht.upce.cz/en/the-ministers-award-also-went-to-our-faculty>

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. Michal Holčápek, Ph.D.	Power List 2020 – Around the World in 60 Scientists or The Top 100 Most Influential People in Analytical Science	The Analytical Scientist, UK
prof. Ing. Michal Holčápek, Ph.D.	Award of the Minister of Education, Youth and Sports for Outstanding Achievements in Research, Experimental Development, and Innovation in Natural Sciences (2021)	Ministry of Education, Youth and Sports of the Czech Republic
prof. Ing. Michal Holčápek, Ph.D.	Herbert J. Dutton Award – American Oil Chemists' Society Award for Significant Contributions to the Analysis of Oils and Fats (2022)	American Oil Chemists' Society
prof. Ing. Michal Holčápek, Ph.D.	Rudolf Lukeš Award – for an Outstanding Collection of Original Works in the Field of Organic Chemistry Published in Prestigious International Journals in the Last Five Years (2023)	Experientia Foundation, Czech Chemical Society
prof. Ing. Michal Holčápek, Ph.D.	Neuron Award 2023 for Science and Business Collaboration	Neuron Foundation
prof. Ing. Roman Jambor, Ph.D. doc. Ing. David Veselý, Ph.D.	Top Innovation 2023	Pardubice Business Incubator P-PINK
Dr.-Ing. Jan Macák	TechConnect 2019 Innovation Award	TechConnect World Innovation Conference & Expo, USA
doc. Ing. Tomáš Syrový, Ph.D.	Visionary 2019 – Award for Technological and Societal Contributions in the Field of Smart Technologies in Healthcare	CzechInno
Ing. Milan Sýs, Ph.D.	Metrohm Award 2019 for the Best Publication by a Young Chemist (Under 35 Years Old)	The Analytical Scientist, UK
prof. Ing. Svatopluk Zeman, DrSc.	Personality of the Czech Defence and Security Industry – Award for Contributions to the Development of the Defence and Security Sector	Ministry of Education, Youth and Sports 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
prof. Ing. Roman Bulánek, Ph.D.	Scientific Reports, 2045-2322
prof. Ing. Filip Bureš, Ph.D.	Dyes and Pigments, 0143-7208
prof. Ing. Michal Holčápek, Ph.D.	Analytical and Bioanalytical Chemistry, 1618-2650
prof. Ing. Michal Holčápek, Ph.D.	TrAC Trends in Analytical Chemistry, 1879-3142
doc. Ing. Lenka Husáková, Ph.D.	Journal of Food Composition and Analysis, 0889-1575
prof. Ing. Petr Němec, Ph.D.	Scientific Reports, 2045-2322
prof. Ing. Jiří Málek, DrSc.	Journal of Thermal Analysis and Calorimetry, 1388-6150
prof. Ing. Jaromír Šňupárek, DrSc.	Progress in Organic Coatings, 0300-9440
prof. Ing. Petra Šulcová, Ph.D.	Journal of Thermal Analysis and Calorimetry, 1388-6150
prof. Ing. Svatopluk Zeman, DrSc.	Journal of Hazardous Materials, 0304-3894

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. Filip Bureš, Ph.D.	From FD to FB....	ETH Zurich, Switzerland	2019
prof. Ing. Libor Čapek, Ph.D.	Layered Double Hydroxide (LDH) – based catalysts: tuning of basic sites, structural, and catalytic properties	NIMS, Tsukuba, Japan	2023
doc. Ing. Petr Česla, Ph.D.	Uncommon Setup in On-line Comprehensive Two-dimensional LC Allowing Fraction Manipulation – invited lecture	43 rd International Symposium on Capillary Chromatography & The 16 th GCxGC Symposium, Fort Worth, TX, USA	2019
prof. Ing. Michal Holčapek, Ph.D.	UHPSFC/MS as the Method of Choice for High-throughput Lipidomic Quantitation of Biological Samples	HPLC 2022: 50 th International Symposium on High Performance Liquid Phase Separations and Related Techniques, San Diego, California, USA	2022
Dr.-Ing. Jan Macák	Plenary talk – Atomic Layer Deposition for Modification of Various 1D Nanomaterials,	SVC Meeting 2022, May 2022, Long Beach, USA	2022
prof. Ing. Jiří Málek, DrSc.	Kinetic phenomena in chalcogenide glasses	University of Arizona, USA	2023
prof. Dr. Virginie Nazabal	Chalcogenide materials development for infrared sensor innovations; plenary lecture	13 th International Conference on Physics of Advanced Materials, ICPAM-13, September 24-30, 2021, Sant Feliu de Guixols, Spain	2021
prof. Ing. Petr Němec, Ph.D.	Amorphous Ge-Sb-Se thin films: Photoinduced effects	31 st International Materials Research Congress, August 13-18, 2023, Cancun, Mexico	2023
doc. Ing. Jiří Pachman, Ph.D.	Experiments with high explosives	Cambridge University, UK	2019
prof. Ing. Aleš Růžička, Ph.D.	Nitrogen rich ligands for stabilization of obscure structures; from tin to lithium	Universite de Bourgogne, Dijon, 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
Dr. Jean-Luc Adam	University of Rennes, CNRS, ISCR (Institute of Chemical Sciences of Rennes), France	Chalcogenide Glasses and Waveguides for Infrared Photonics	2022
prof. Santanu Bhattacharya	Department of Organic Chemistry, Indian Institute of Science, Bengaluru	Covalent Organic Square Lattice Building Blocks toward Supercapacitive Energy Storage	2022
prof. Frédéric Castet	Université de Bordeaux, France	Dynamics of Second-Order Nonlinear Optical Responses of Organic Materials	2022
prof. Jonathan P. Hill	National Institute of Materials Science, Japan	The Pyrazineacenes	2022
prof. Philip K. Hopke	Clarkson University, New York, USA	An Introduction to Source Apportionment	2021
prof. Dr. Christian Müller	Freie Universität Berlin	News from Phosphorus in Low Coordination	2022
prof. Kornelius Nielsch	Leibniz Institute for Solid State and Materials Research Dresden – IFW, Germany	Thermoelectric Properties of Sb ₂ Te ₃ -Based Ferecrystals based on Atomic Layer Deposition	2023
prof. Dr. Harald Pasch	Stellenbosch University, Department of Chemistry and Polymer Science, South Africa	Playing Analytical LEGO for Unravelling Polymer Nanostructure	2020
prof. Dr. Eric Rivard	University of Alberta, Department of Chemistry, Edmonton, Alberta, Canada	New Strategies to Stabilize Silicon and Germanium in Low Oxidation States	2019
prof. Tanguy Rouxel	Institute of Physics of Rennes, University of Rennes, CNRS, IPR Rennes, France	Mechanical Behaviour and Indentation of Non-Oxide Glasses	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
prof. Ing. Roman Bulánek, Ph.D. prof. Ing. Dr. Čestmír Drašar prof. Ing. Michal Holčapek, Ph.D. Ing. Miloš Krbal, Ph.D. Dr.-Ing. Jan Macák prof. Ing. Petr Němec, Ph.D. prof. Ing. Aleš Růžička, Ph.D. prof. Ing. Tomáš Wágner, DrSc.	Evaluation Panels	Czech Science Foundation (GA ČR)	2019-2023
prof. Ing. Filip, Bureš, Ph.D.	Preludium, Opus	National Science Centre, Poland	2022
doc. Ing. Petr Česla, Ph.D.	INTER-EXCELLENCE/INTER-ACTION	Ministry of Education, Youth and Sports of the Czech Republic	2019
prof. Ing. Libor Dostál, Ph.D.	ERC Starting Grant	European Research Council (ERC)	2019, 2020
prof. Ing. Jiří Hanusek, Ph.D.	Basic Research, Applied Research, and Development	Slovak Research and Development Agency (APVV)	2019-2023
prof. Ing. Aleš Imramovský, Ph.D.	INTER-EXCELLENCE/INTER-ACTION	Ministry of Education, Youth and Sports of the Czech Republic	2022
Dr.-Ing. Jan Macák	Rapporteur and Reviewer	Horizon 2020 – Marie Skłodowska-Curie Fellowship	2019-2023
prof. Ing. Tomáš Wágner, DrSc.	M-ERA.NET	Austrian Research Promotion Agency (FFG), Vienna	2021-
prof. Ing. Tomáš Wágner, DrSc.	Standard Projects	National Research, Development and Innovation Office (NRDI Office) Department for Researcher Excellence Budapest	2019-2021
prof. Ing. Tomáš Wágner, DrSc.	INTER-EXCELLENCE	Ministry of Education, Youth and Sports of the Czech Republic	2021-2022

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.

Self-assessment:

During the evaluation period, numerous research projects were implemented at FChT. The total project-related revenue for the faculty during this period amounted to **CZK 638.240.000 (EUR 25.176.525)**, with **CZK 511.231.000 (EUR 20.166.332)** obtained as a primary recipient and **CZK 127.009.000 (EUR 5.010.193)** as a participating institution.

The most significant projects include:

1. ERC Advanced Grant – ONCOLIPID. Oncolipidomics: Why is lipidomic dysregulation pattern in blood similar for various cancers?^[1]

Principal Investigator: Prof. Holčápek (2023–2028)

This project focuses on elucidating the mechanisms by which changes in lipid concentrations and composition occur in the blood during cancer development. Understanding these mechanisms may open new pathways not only for cancer detection but also for effective treatment and the development of drugs targeting dysregulated metabolic pathways.

Initiated in 2023, the project develops novel approaches for the quantification of over 2.000 lipids across multiple lipid classes using ¹³C-stable isotope-labelled standards, liquid chromatography, mass spectrometry, and ion mobility spectrometry. The expected outcomes include the creation of a Cancer Lipidome Atlas and Bayesian software for automated data processing.

The study integrates lipidomic data with metabolomic, proteomic, and transcriptomic datasets and tests the hypothesis that the reduced activity of Ceramide Synthase 2, induced by cancer cells, may lead to the downregulation of certain very long-chain lipids.

This is a highly unique research initiative that builds on the expertise of Prof. Holčápek's team and the results of previous projects, including ERC-CZ. If successful, the project has strong application potential in the targeted development of pharmaceuticals for specific cancer types.

FORD classification: 1.4 Chemical Sciences

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.

2. ERC Starting Grant – CHROMTISOL. Towards New Generation of Solid-State Photovoltaic Cell: Harvesting Nanotubular Titania and Hybrid Chromophores^[2]

Principal Investigator: Dr.-Ing. Macák (2015–2020)

This project developed a method for producing TiO₂ nanotubes for use in an innovative solar cell concept. Using newly designed anodisation protocols, homogeneous nanotube layers with varying aspect ratios were fabricated, and the influence of crystalline structure on the final properties of the nanotubes was thoroughly investigated.

Two distinct classes of chromophore materials were developed:

- Inorganic crystalline semiconductors,
- Organic push-pull sensitizers.

The CHROMTISOL project introduced a new concept for solar cells, combining titanium dioxide nanotubes with suitable inorganic and organic chromophores, leading to efficient solar-to-electric energy conversion.

This project underscores the excellence of research conducted at FChT and falls within the FORD categories:

- 2.5 Materials Engineering,
- 2.10 Nanotechnology.

3. MŠMT – ERC CZ Grant. Positively Charged Heteroboranes^[3]

Principal Investigator: Ing. Vrána, Ph.D. (2023–2025)

This project focuses on borane chemistry, which is of significant relevance to materials science, medicinal chemistry, and organometallic chemistry. The primary aim of the project, launched in 2023, is to synthesize a broad range of cationic borane clusters with varying structural and stabilizing elements. The chemical properties of these novel compounds will then be systematically studied.

Potential applications include:

- Catalysis,
- Biomedical interactions, due to their high water solubility.

This project is classified as frontier research and is supported by national funding. It successfully passed the ERC expert panel evaluations with an A or B rating in the second round but was not selected for ERC funding. It originates from one of FChT's top-tier basic research teams.

FORD classification: 1.4 Chemical Sciences

4. Horizon 2020 – MADRAS. New Materials and Processing in Organic Electronics^[4]

Principal Investigator: doc. Syrový (2020–2023)

This project addresses the need to develop and utilise new materials for the next generation of organic and large-area electronics (OLAE). The MADRAS project aimed to demonstrate improvements in electrical characteristics, processability, stability, and lifespan of OLAE devices by employing innovative materials and manufacturing methods.

Within the R&D&I activities of the project, emphasis was also placed on the seamless integration of products into advanced manufacturing processes, such as In-Mold technology, which combines functional printing of electronic components, hybridisation (placing surface-mount devices – SMDs) with traditional plastic forming processes (thermoforming, injection moulding).

The project developed various printed sensor structures, particularly for NFC tags, which enable monitoring of storage conditions during product transport in In-Mold manufactured packaging. Additional applications include automotive industry sensors.

FChT participated in the project as a partner institution. The consortium included 12 participants from five EU countries, with FChT being the only university involved. Its role was focused on developing ink formulations containing conductive polymers for hole transport layers (HTL) and transparent conductive layers (TCL) using printing technologies, as well as developing technological processes for printing these layers.

5. Horizon 2020 – IBAIA. Innovative Environmental Multisensing for Waterbody Quality Monitoring and Remediation Assessment^[5]

Principal Investigator: Prof. Němec (2022–2026)

The project's objective is to develop four new sensor modules based on complementary photonics and electrochemical technologies for monitoring water quality in the environment.

The developed sensors include:

- Mid-infrared sensors – for detecting organic chemicals,
- Visible and near-infrared sensors – for microplastic and salinity detection,
- Optodes – for physical-chemical parameter measurement,
- Electrochemical sensors – for monitoring heavy metals and nutrient salts.

FChT is a partner institution in this consortium-based project, which includes 17 participants from eight EU member states. The consortium brings together expertise in advanced materials science, microfluidics, data processing, and packaging technologies.

FChT's role is based on its expertise in detecting and monitoring organic pollutants and primarily involves research within Work Package 2, focusing on:

- Deposition of thin films,
- Development of a photonic sensor for microplastic monitoring,
- Multi-parameter water monitoring.

The expected outcome of the project is an advanced multi-sensor system, validated by end-users in real-world conditions (in situ), which will be more cost-effective, reliable, and easier to use compared to existing solutions.

6. Horizon 2020 – JIDEP. Joint Industrial Data Exchange Pipeline^[6]

Principal Investigator: doc. Syrový (2022–2025)

The JIDEP project aims to establish a platform for industrial data exchange, enabling data integration across seemingly unrelated sectors into a cooperative data interface. The project seeks to shift from a linear production model to a circular economy, providing a solution to overcome barriers in industrial reuse implementation through a specialised data platform.

This shared industrial data exchange platform is built on the Industry 4.0 principles, ensuring coherent semantic communication between various stakeholders, either directly or indirectly contributing to the EU's climate neutrality goals by 2050.

Within JIDEP, data management tools will be developed to:

- Enable the creation of sustainable solutions, technologies, and materials,
- Optimise the entire product lifecycle, aligning it with circular economy standards,
- Enhance organisational and industrial resilience against supply chain disruptions in the short, medium, and long term.

FChT is a partner institution in this consortium-based project, which includes 13 participants. Alongside industrial partners, FChT is one of four European universities participating in the project.

FChT's specific role involves research into:

- Technological processes for disassembling electronic components from printed circuit boards (PCBs) for potential reuse in new applications,
- Development of desoldering paste,
- Development of printing processes for this paste using additive manufacturing (AM) techniques.

The project has broad applicability and commercial potential, contributing to the expansion of the circular economy within EU industries.

7. Horizon 2020 – SALAMANDER. Smart Sensors and Self-Healing Functionalities Embedded for Battery Longevity with Manufacturability and Economical Recyclability^[7]

Principal Investigator: doc. Syrový (2023–2026)

This project focuses on the research and development of electrode materials for lithium-ion batteries with self-healing properties. These electrodes incorporate self-healing polymers, which can repair cracks that form during battery cycling when exposed to external stimuli.

In addition to self-healing layers, the project develops sensors for detecting battery malfunctions, such as electrode cracks and other potential failures. Thanks to these sensors, the Battery Management System (BMS) will be able to trigger appropriate corrective actions to mitigate battery issues.

FChT is a partner institution in this consortium-based project, which includes 11 partners, including four universities. The FChT research group is responsible for:

- Developing sensor printing inks,
- Investigating sensor printing technology for detecting physical and chemical conditions within battery cells (temperature, ion concentrations, etc.).

For sensor printing, roll-to-roll (R2R) printing and additive manufacturing (AM) technologies using collaborative robots will be utilised. The project aims to produce lithium-ion batteries with extended lifespan, enhanced safety, and continuous condition monitoring, offering significant application potential.

8. Horizon 2020 – LoveFood2Market. A Portable MicroNanoBioSystem and Instrument for Ultra-Fast Analysis of Pathogens in Food: Innovation from LOVE-FOOD Lab Prototype to a Pre-Commercial Instrument^[8]

Principal Investigator: Prof. Bílková (2016–2019)

The goal of this project was to develop a universal and reliable solution for food pathogen detection by integrating micro-nano-bio systems. The project aimed to advance a laboratory prototype developed in the previous LOVE-FOOD Horizon 2020 project into a pre-commercial instrument.

The system combined multiple innovative concepts into a credit-card-sized Lab-on-Chip platform, enabling (without the need for skilled personnel):

- Bacterial capture and lysis,
- DNA extraction and amplification,
- Pathogen DNA detection

The project successfully improved system performance, reducing the total pathogen analysis time to under three hours, including a two-hour pre-cultivation phase. The resulting platform enables

the detection of multiple pathogens, including Salmonella, Listeria, E. coli, and Bacillus cereus, making it suitable for rapid testing of dairy products and meat.

FChT participated as a partner institution within a seven-member consortium. The main role of FChT was to develop magnetic carriers with immobilised enzymes for pathogen capture and detection.

9. GAČR – Chalcogenide Thin Films Doped with Rare-Earth Ions for Gas Detection in the Mid-Infrared Spectrum^[9]

Principal Investigator: Prof. Nazabal (2019–2021)

This project aimed to develop chalcogenide thin films doped with rare-earth ions for applications in chemical sensing and environmental monitoring. The research focused on the luminescence properties of various rare-earth ions (Er^{3+} , Dy^{3+} , Pr^{3+} , etc.) in the mid-infrared spectral range.

The project resulted in the development of advanced methodologies for producing novel active chalcogenide materials with mid-infrared emission properties. The findings significantly contributed to understanding the fundamental relationships between material structure and luminescence properties.

These materials have potential applications in:

- Infrared light sources,
- Waveguides for mid-infrared spectroscopy.

FChT served as the primary recipient of the project funding. The project had significant relevance for both basic research (FORD 2.5 Materials Engineering) and future applications, as evidenced by:

- 12 publications in high-impact journals,
- Outstanding evaluation of project outcomes,
- Nomination for the 2022 Chairman's Award of the Czech Science Foundation (GAČR) in the field of Technical Sciences.

10. Ministry of Agriculture – SMARTFIELD. Automated System for Collecting and Processing Temperature and Humidity Parameters of Microclimate and Soil for Precision Agriculture in the Czech Republic Based on IoT^[10]

Principal Investigator: doc. Syrový (2018–2022)

This project focused on autonomous sensors equipped with printed temperature and humidity sensors for monitoring:

- Soil temperature and moisture,
- Microclimate conditions of crops.

The printed sensors were integrated with communication units, transmitting data via IoT networks (SigFox, LoRa, etc.) to Management Information Systems (MIS). The autonomous sensor system enabled users to monitor and manage irrigation in crop production, supporting "Precision Agriculture" (Smart Farming) practices. The developed system was significantly more cost-effective than existing solutions, allowing for higher sensor density, which is critical for improving irrigation precision. FChT participated as a co-recipient in a five-member project consortium.

Key outcomes of the project included:

- Functional prototypes,
- Verified technologies,
- Patent applications.

The project received an "Outstanding" rating with international impact.

The primary role of the FChT team led by doc. Syrový was the development of a unique printing method on wooden surfaces, providing an eco-friendly and cost-effective alternative for sensor production.

HTML links to additional documentation:

- [1a] <https://www.upce.cz/en/scientist-from-the-university-of-pardubice-receives-prestigious-european-grant-for-research-on>
- [1b] <https://cordis.europa.eu/project/id/101095860>
- [2] <https://cordis.europa.eu/project/id/638857>
- [3] <https://old.starfos.tacr.cz/en/project/LL2309>
- [4] <https://madras-project.eu/>
- [5] <https://ibaia.eu/>
- [6] <https://www.jidep.eu/>
- [7a] <https://www.salamander-eu.com/>
- [7b] <https://www.upce.cz/en/sensor-to-monitor-battery-condition-prolong-battery-life-and-prevent-ignition>
- [8] <https://cordis.europa.eu/project/id/687681/results>
- [9] <https://fcht.upce.cz/en/projekt/1033696>
- [10] <https://www.upce.cz/en/smart-sensors-from-the-university-of-pardubice-to-save-water-consumption>

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 National Agency for International Education and Research	Innovation of Education Methods and Skills at the University of Pardubice - INEMSUP	1 523 / 60 076				
Czech National Agency for International Education and Research	New Trends in Teaching Sustainability-Focused Subjects (NEWTEC)				632 / 24 936	632 / 24 936
European Defence Agency (EU)	European Detonation Code (EuDetCode)				245 / 9 675	478 / 18 840
ERC, Advanced Grant (EU)	Oncolipidomics: Why is lipidomic dysregulation pattern in blood similar for various cancers? (ONCOLIPID)					50 203 / 1 980 377
ERC, Starting Grant (EU)	Towards New Generation of Solid-State Photovoltaic Cell: Harvesting Nanotubular Titania and Hybrid Chromophores (CHROMTISOL)	1 632 / 64 371		1 629 / 64 277		
Czech Science Foundation (GA ČR)	A Structure-Based Predictive Model for Brønsted Acid Catalysed Reactions	2 975 / 117 357	2 975 / 117 357	2 975 / 117 357		
Czech Science Foundation (GA ČR)	Absolute Quantification of Ionic and Polar Biomolecules Using Supercritical Fluid Chromatography Coupled with Mass Spectrometry		1 998 / 78 817	2 028 / 80 000	2 183 / 86 114	
Czech Science Foundation (GA ČR)	Auto-Ionised Cations of Main-Group Elements as Catalysts for ROP Reactions		1 808 / 71 321	1 790 / 70 611	1 727 / 68 126	
Czech Science Foundation (GA ČR)	Chalcogenide Thin Films Doped with Rare Earth Ions for Gas Detection in the Mid-Infrared Spectral Range	1 885 / 74 359	1 985 / 78 304	1 916 / 75 582		
Czech Science Foundation (GA ČR)	Characterisation of the Human Lipidome and Metabolome for Personalised Healthcare and Biomarker Discovery: A Kidney Cancer Study	4 437 / 175 030	4 519 / 178 264			
Czech Science Foundation (GA ČR)	DicyanoPyraZin: A Versatile Tool for Photoredox Catalysis				1 633 / 64 418	1 683 / 66 391
Czech Science Foundation (GA ČR)	Nitrogen Ligands for Main-Group Metal Elements – Bulkier, More Conjugated, and More Reactive			2 996 / 118 185	2 996 / 118 185	2 996 / 118 185
Czech Science Foundation (GA ČR)	Two-Dimensional Transition Metal Phosphides via Atomic Layer Deposition					2 797 / 110 335

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.

Czech Science Foundation (GA ČR)	Electrochemical Study of Novel Artificial Enzymes and Their Role in Neurotransmitter Analysis	2 506 / 98 856	2 528 / 99 724	2 775 / 109 467		
Czech Science Foundation (GA ČR)	Focusing Effects in Multidimensional Liquid-Phase Separations	979 / 38 619	979 / 38 619			
Czech Science Foundation (GA ČR)	Heterojunction Photocatalysts and TiO ₂ Photocatalysts Simultaneously Doped with Metals and Non-Metals for Environmental Photocatalytic Reactions		2 963 / 116 884	2 963 / 116 884	2 963 / 116 884	
Czech Science Foundation (GA ČR)	Infrared Photonics for Chemical Sensors: A Material Strategy Based on Amorphous Chalcogenides				2 193 / 86 509	2 277 / 89 822
Czech Science Foundation (GA ČR)	Engineering Bipolar Electrochemistry Technology for the Next Generation of TiO ₂ Nanotubular Layers					1 532 / 60 434
Czech Science Foundation (GA ČR)	Boron-Based Catalysts for the Oxidative Dehydrogenation of Alkanes				3 305 / 130 375	3 453 / 136 213
Czech Science Foundation (GA ČR)	Kinetic Analysis of Complex Physicochemical Processes	1 361 / 53 688				
Czech Science Foundation (GA ČR)	Kinetic Processes in Bulk Chalcogenides and Thin Films – The Relationship Between Crystal Growth, Viscosity, and Self-Diffusion		3 361 / 132 584	3 361 / 132 584	3 361 / 132 584	
Czech Science Foundation (GA ČR)	Multideprotonatable, Ambiphilic, and Hybrid Ligands with a Structure Suitable for Complexing Metals in Low Oxidation States	2 350 / 92 702				
Czech Science Foundation (GA ČR)	New Prospective Phosphate- and Borophosphate-Based Glasses and Glass-Ceramic Materials	1 678 / 66 193	1 678 / 66 193			
Czech Science Foundation (GA ČR)	From Simple Precursors to Unique Heterocycles Containing Heavier Group 15 Elements	1 206 / 47 574	1 206 / 47 574			
Czech Science Foundation (GA ČR)	Optical Properties of Amorphous, Thermally and Laser-Crystallised Chalcogenide-Based Materials and Their Optimisation for Phase-Controlled Nanophotonics					2 206 / 87 022
Czech Science Foundation (GA ČR)	Organometallic Tellurium Cations for E-H Bond Activation in Boranes, Silanes, and Phosphines				1 287 / 50 769	1 215 / 47 929
Czech Science Foundation (GA ČR)	Influencing Glass-Forming Ability and Modifying Photoinduced Properties of Hybrid Amorphous Chalcogenides via Controlled Free Electron Pair Concentration		1 767 / 69 704	1 803 / 71 124	522 / 20 592	

Czech Science Foundation (GA ČR)	Advanced Analysis of the Relationship Between Optical, Electronic, Textural, and Structural Properties of Doped TiO ₂ Materials and Their Photocatalytic Activity	1 909 / 75 306				
Czech Science Foundation (GA ČR)	Advanced Methods for the Synthesis of Metalloid and Main-Group Metal Tellurides				3 238 / 127 732	3 346 / 131 922
Czech Science Foundation (GA ČR)	Advanced Methods for the Preparation and Modification of Chalcogenide Thin Films	2 590 / 102 170	2 490 / 98 225			
Czech Science Foundation (GA ČR)	Polyhedral (Car)Boranes – Cationic and Catalytically Applicable				2 553 / 100 710	2 543 / 100 302
Czech Science Foundation (GA ČR)	Transition Between Amorphous and Crystalline States (3D2D) in van der Waals-Bonded Chalcogenide Materials	1 851 / 73 018	2 087 / 82 327	2 087 / 82 327		
Czech Science Foundation (GA ČR)	Direct Laser Writing in High-Index Glasses	1 477 / 58 264	1 477 / 58 264	1 396 / 55 069		
Czech Science Foundation (GA ČR)	Recyclable Catalysts for Sustainable Technologies in Advanced Organic Intermediate Synthesis	1 430 / 56 410				
Czech Science Foundation (GA ČR)	Self-Adaptive Multidimensional Separations				1 605 / 63 314	2 600 / 102 564
Czech Science Foundation (GA ČR)	Selenide 2D Nanomaterials with Unique Properties Prepared via Atomic Layer Deposition	2 223 / 87 692	2 035 / 80 276			
Czech Science Foundation (GA ČR)	Mixed Perovskites as Multifunctional Materials in Pigment Studies				1 857 / 73 254	1 809 / 71 361
Czech Science Foundation (GA ČR)	Combining Multidimensional Chromatography and Mass Spectrometry in Quantitative Approaches for the Detailed Characterisation of the Human Plasma Lipidome			2 604 / 102 722	2 416 / 95 306	4 290 / 169 231
Czech Science Foundation (GA ČR)	Superhydrophobic Materials Based on Heteroboroxines					1 954 / 77 081
Czech Science Foundation (GA ČR)	Synthesis of Large-Area TiO ₂ Nanotubular Layers for Efficient Photocatalytic Degradation of Gaseous Pollutants and Viruses			2 687 / 105 996	2 791 / 110 099	2 789 / 110 020
Czech Science Foundation (GA ČR)	Layered Semiconductors Bi ₂ O ₂ Se Doped with Transition Metals: Correlation of Transport, Magnetic, and Thermoelectric Properties				2 584 / 101 933	2 696 / 106 351
Czech Science Foundation (GA ČR)	Investigation of the Toxicity Mechanism of S-Conjugates of Aminophenolic Drugs	2 688 / 106 036	3 018 / 119 053	2 844 / 112 189		

Czech Science Foundation (GA ČR)	Structure-Activity Relationships of Mg-Al/Fe Mixed Oxides, Including Post-Synthetic Modifications, in Transesterification and the Guerbet Reaction	2 637 / 104 024	2 717 / 107 179	2 737 / 107 968		
Czech Science Foundation (GA ČR)	Electronic States of Transition Metals in Tetradymites and Their Band Structure – Comparison of 3d, 4d, and 5d Elements	2 704 / 106 667	2 604 / 102 722	2 629 / 103 708		
Ministry of Finance	Programme for Exchange of Best Practices in Social Responsibility		187 / 7 381	23 / 899	185 / 7 302	
Ministry of Finance	Towards Regenerative and Sustainable Development and Society				245 / 9 665	27 / 1 075
Ministry of Education, Youth and Sports	Modernisation of Software Equipment and Introduction of New Laboratory Tasks and Demonstration Experiments for the Physics Laboratory Course	96 / 3 788				
Ministry of Education, Youth and Sports	Centre for Materials and Nanotechnologies (CEMNAT)					16 160 / 637 475
Ministry of Education, Youth and Sports	Innovation and Enhancement of Physics Laboratory Tasks in the Physics Laboratory Course		73 / 2 880			
Ministry of Education, Youth and Sports	Innovation of the Courses Enterprise Information System and Fundamentals of Logistics for Newly Accredited Study Programmes at the Department of Economics and Management in the Chemical and Food Industry	47 / 1 834				
Ministry of Education, Youth and Sports	Innovation of Laboratory Equipment in the Field of Printing Technology (Department of Printing Technology and Photophysics)	96 / 3 787	98 / 3 866			
Ministry of Education, Youth and Sports	Positively Charged Heteroboranes					2 153 / 84 931
Ministry of Education, Youth and Sports	Conjugated 2D Covalent Organic Frameworks Based on Carbon and Alternating D-A-D/A-D-A Systems with Distinct Optoelectronic Properties		1 455 / 57 396	1 430 / 56 410	1 430 / 56 410	
Ministry of Education, Youth and Sports	Laboratory Task: Schlieren Flow Visualisation Method		84 / 3 314			
Ministry of Education, Youth and Sports	Modernisation and Upgrade of CEMNAT Infrastructure	2 340 / 92 306				
Ministry of Education, Youth and Sports	Modernisation of Practical Training and Enhancement of Practical Skills in Technically Oriented Study Programmes (PRAKTIK)	7 315 / 288 560	805 / 31 761	482 / 19 008	175 / 6 891	7 315 / 288 560
Ministry of Education, Youth and Sports	Modernisation of the Student Laboratory for the Synthesis of Organometallic Compounds		90 / 3 550			

Ministry of Education, Youth and Sports	Modernisation of Teaching Capabilities in the Student Laboratory	96 / 3 787				
Ministry of Education, Youth and Sports	NANOBIO – Strengthening Interdisciplinary Cooperation in Nanomaterials Research and Studying Their Effects on Living Organisms	17 315 / 683 025	19 224 / 758 339	18 065 / 712 627	14 719 / 580 640	
Ministry of Education, Youth and Sports	Direct Potentiometry with Ion-Selective Electrodes		90 / 3 550			
Ministry of Education, Youth and Sports	Development of the Study Course "Sustainable Chemistry" for Students of the Faculty of Chemical Technology		80 / 3 156			
Ministry of Education, Youth and Sports	Tablet Formulation Using 3D Printing Technology	96 / 3 787				
Ministry of Education, Youth and Sports	Differentiation and Determination of Nucleic Acids (Introduction of a New Biochemistry Laboratory Task)		70 / 2 761			
Ministry of Education, Youth and Sports	High-Sensitivity Sensors and Low-Density Materials Based on Polymeric Nanocomposites (NANOMAT)	10 822 / 426 899	11 005 / 434 113	5 067 / 199 882	3 130 / 123 459	5 045 / 199 031
Ministry of Education, Youth and Sports	Determination of Mandelic Acid in Human Urine	96 / 3 787				
Ministry of Education, Youth and Sports	Study of Corrosion Resistance of Pigmented Coatings Using Potentiodynamic Measurements		90 / 3 550			
Ministry of Education, Youth and Sports	Study of Surface Tension in Melts and Supercooled Melts of Amorphous Materials		81 / 3 195			
Ministry of Education, Youth and Sports	Printed Sensor Elements Based on 3D RGO Carbon Structures	42 / 1 654	120 / 4 734	120 / 4 734		
Ministry of Education, Youth and Sports	Development of the Courses "Forecasting in Business Management" and "Business Operations" in the Newly Accredited Master's Degree Programme "Economics and Management of Chemical Industry Enterprises"	47 / 1 834				
Ministry of Education, Youth and Sports	Research Infrastructure CEMNAT	7 507 / 296 134	18 566 / 732 387	19 178 / 756 529	20 409 / 805 089	
Ministry of Education, Youth and Sports	Implementation of Infrared Spectroscopy in the Laboratories for Coating Materials and Organic Coatings	96 / 3 787				

Ministry of Education, Youth and Sports	Introduction of Modern Laboratory Tasks in Newly Designed Immunology Courses		70 / 2 761			
Ministry of Education, Youth and Sports	Introduction of a New Task in Course C513 – Food Analysis Laboratory	96 / 3 787				
Ministry of the Interior	Identification of Improvised Explosive Residues Using Physicochemical Analytical Methods Under Real Post-Explosion Conditions	1 930 / 76 134	781 / 30 809	42 / 1 657		
Ministry of the Interior	Low-Smoke Police Restraint Devices					1 467 / 57 475
Ministry of Health	Prospective Study for the Early Detection of Pancreatic Cancer and Monitoring of Treatment Progress Based on Lipidomic Profiling by Mass Spectrometry			2 530 / 99 816	3 826 / 150 941	3 901 / 153 822
Office of Naval Research Global (USA)	Organisation of the 25th International Seminar – New Trends in Research of Energetic Materials					215 / 8 481
Office of Naval Research Global (USA)	Support for the Organisation of the 22nd International Seminar – New Trends in Research of Energetic Materials	228 / 8 983				
Technology Agency of the Czech Republic	EllyteMat – Advanced Materials for Electrolytes in Lithium and Post-Lithium Batteries				4 161 / 164 151	4 457 / 175 801
Technology Agency of the Czech Republic	Combined Process for the Elimination of Chloroacetanilide Pesticides from Contaminated Water and Soil		2 296 / 90 588	3 497 / 137 949	1 083 / 42 730	
Technology Agency of the Czech Republic	Removal of Polar Polyfluorinated Compounds from Contaminated Materials	1 998 / 78 806	2 664 / 105 096	582 / 22 956		
Technology Agency of the Czech Republic	THERMOS – Tellurium-Free Thermoelectric Modules for Waste Heat Recovery Prepared via Interfacial Modifications				1 240 / 48 934	1 634 / 64 452
Total		92 304 / 3 641 091	102 124 / 4 028 578	92 236 / 3 638 517	90 694 / 3 577 727	133 873 / 5 280 419
In the role of another participant						
Provider ²⁷	Project name	Support (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
Horizon 2020 (EU)	A portable MicroNanoBioSystem and Instrument for ultra-fast analysis of pathogens in food: Innovation from LOVE-FOOD lab prototype to a pre- commercial instrument (LoveFood2Market)		888 / 35 015			
Horizon Europe (EU)	Innovative environmental multisensing for waterbody quality monitoring and remediation assessment (IBAIA)					3 762 / 148 397
Horizon Europe (EU)	Joint Industrial Data Exchange Pipeline (JIDEP)				1 853 / 73 077	
Horizon 2020 (EU)	NEW MATERIALS AND PROCESSING IN ORGANIC ELECTRONICS (MADRAS)		2 883 / 113 715		2 718 / 107 228	

²⁷ Ibid.

ERASMUS+ (EU)	A New Academic Path for EU Project Managers: Reducing Deficiencies for Improved Planning and Management in Europe				335 / 13 219	336 / 13 246
Horizon Europe (EU)	Smart Sensors and Self-Healing Functionalities Embedded for Battery Longevity with Manufacturability and Economical Recyclability (SALAMANDER)					2 494 / 98 364
Czech Science Foundation (GA ČR)	Chemistry of Globular Hydrocarbons with a B-Cluster Core Enclosed in a Methylated Shell	1 677 / 66 154	1 690 / 66 667	1 702 / 67 140		
Czech Science Foundation (GA ČR)	Ionic Liquids Containing Metals Immobilised on 2D Materials as Heterogeneous Catalysts for Polymerisation				709 / 27 968	1 244 / 49 073
Czech Science Foundation (GA ČR)	Single-Atom 2D Photocatalysts					3 697 / 145 838
Czech Science Foundation (GA ČR)	Quantification of Basicity in Reconstructed Layered Double Hydroxides and Its Relationship with Catalytic Behaviour in Base-Catalysed Reactions	1 253 / 49 428	1 253 / 49 428	1 253 / 49 428		
Czech Science Foundation (GA ČR)	Materials with Multi-Photon Absorption for 3D Printing and 3D Imaging (M-FOR-3D)	808 / 31 874				
Czech Science Foundation (GA ČR)	Molecular Materials for Overcoming the Shockley–Queisser Limit	1 851 / 73 018	1 826 / 72 032	1 838 / 72 505		
Czech Science Foundation (GA ČR)	Nanoparticles of Selected Layered Materials as Precursors for Nanocomposites and Inorganic–Organic Hybrid Materials	750 / 29 586				
Czech Science Foundation (GA ČR)	New Electrochemical Methods for Monitoring Biologically Active Organic Compounds in Environmental, Biological, and Food Matrices	658 / 25 957				
Czech Science Foundation (GA ČR)	New Strategies for Enhancing the Sensor Properties of Novel Electrode Materials Through Pre-Treatment or Surface Modification		1 187 / 46 824	1 175 / 46 351	1 175 / 46 351	
Czech Science Foundation (GA ČR)	Difficult-to-Prepare Molecular Sieves: Properties and Applications	952 / 37 554				
Czech Science Foundation (GA ČR)	Optimisation of Proton Conductivity in Zirconium-Based Metal–Organic Frameworks via Peripheral Substitution of Porphyrin Ligands					1 140 / 44 970
Czech Science Foundation (GA ČR)	Pnpt1 as a Regulator of Metabolic Reprogramming in Phagocytes					1 198 / 47 258
Czech Science Foundation (GA ČR)	Pseudopeptide-Based Proteasome Inhibitors	890 / 35 109	890 / 35 109			

Czech Science Foundation (GA ČR)	Interfaces Between Thin-Film Iron-Containing Chalcogenides and Insulators: Impact on Structure, Magnetism, and Unconventional Superconductivity	502 / 19 803	440 / 17 357	421 / 16 607		
Czech Science Foundation (GA ČR)	Thermoelectric Magnetic Sulphides	578 / 22 801	560 / 22 091			
Czech Science Foundation (GA ČR)	Research on Zeolites with Nanostructured Architecture: Synergy Between Experiment and Theory		1 941 / 76 568	1 941 / 76 568	1 941 / 76 568	
Czech Science Foundation (GA ČR)	Mutually Reinforced Interactions Between Inorganic and Organic Systems: Crystal Arrangement of Exo-Substituted Heteroboranes and Their Adducts	1 489 / 58 738				
Ministry of Industry and Trade	Innovative Enhancement of the Utility Properties and Durability of Combustible-Case Ammunition	220 / 8 679	199 / 7 850	195 / 7 692	190 / 7 495	
Ministry of Industry and Trade	Catalysed Aerobic Oxidations in Industrial Practice	290 / 11 440	250 / 9 862			
Ministry of Industry and Trade	Preservatives for Writing Fluids	320 / 12 623				
Ministry of Industry and Trade	New Additives for Multifunctional Modification of Polymer Surfaces	800 / 31 558	800 / 31 558	800 / 31 558		
Ministry of Industry and Trade	Prospective Methods for the Production and Testing of Emulsion Explosives	366 / 14 438	1 135 / 44 773	1 135 / 44 773		
Ministry of Industry and Trade	Advanced Chemical Gas Generators for the Automotive Industry and Beyond	1 400 / 55 227				
Ministry of Industry and Trade	Technology for the Production of Vinyl Chloroformate for Advanced Materials	608 / 23 984	1 036 / 40 868	1 036 / 40 868	1 036 / 40 868	
Ministry of Industry and Trade	Development and Production of Biodegradable Lactyl Lactates with Conditioning Effects					488 / 19 267
Ministry of Industry and Trade	Development of a System for Assessing the Environmental Impact of Printing Products Using the LCA Method				659 / 25 977	305 / 12 049
Ministry of Industry and Trade	Research and Development of the Integration of Telemetry and Analytical Processes into Print Production Management and Implementation of Industry 4.0 Elements	630 / 24 852	590 / 23 274	471 / 18 580		
Ministry of Industry and Trade	Research and Development of a Lean Manufacturing Support System for Processing Technology in the Printing Industry	691 / 27 258	395 / 15 582			
Ministry of Industry and Trade	Treatment of Industrial Wastewater to Zero Liquid Discharge (ZLD) Using Electrodialysis	1 348 / 53 176	1 354 / 53 412	1 360 / 53 649		
Ministry of Education, Youth and Sports	Organic Redox-Based Batteries for Energy Storage in Conventional and Renewable Energy Sources (ORGBAT)	2 482 / 97 909	2 424 / 95 641	2 482 / 97 919		

Ministry of Education, Youth and Sports	IT4Neuro	1 244 / 49 085	2 216 / 87 428	2 500 / 98 619	341 / 13 465	
Ministry of Education, Youth and Sports	Research and Education in the Field of Printing and Design	312 / 12 316	103 / 4 063	81 / 3 176	134 / 5 286	132 / 5 207
Ministry of the Interior	Development of a Strategic Cluster for Effective Instrumental Technological Procedures in the Detection of Forgeries of Modern Artworks in Forensic Science			614 / 24 213	614 / 24 213	614 / 24 213
Ministry of Agriculture	SMARTFIELD – Automatic System for Collecting and Processing Temperature and Humidity Parameters of Microclimate and Soil for Precision Agriculture in the Czech Republic Based on the Internet of Things (IoT)	825 / 32 544	825 / 32 544	785 / 30 966	675 / 26 627	
Open Society Fund	International Research Experiences for Students (IRES) Grant from the National Science Foundation				108 / 4 267	107 / 4 203
Technology Agency of the Czech Republic	Additive Manufacturing Technology for a Capacitive Sensor in Large-Area Touch Panels					900 / 35 503
Technology Agency of the Czech Republic	Autonomous Identification Systems for Product Detection and Security in Industry 4.0	1 100 / 43 393				
Technology Agency of the Czech Republic	Biocomposite Component for Slow Release of Essential Mineral Substances in Soil for Plant Nutrition	520 / 20 529	502 / 19 787	466 / 18 383		
Technology Agency of the Czech Republic	Digitalisation of Project Management Education Using the Concept of Serious Games, Virtual and Augmented Reality, in Line with Current Business Needs					46 / 1 815
Technology Agency of the Czech Republic	Efficient Removal of Aromatic Halogen Derivatives (AOX) from Local Industrial Sources	1 288 / 50 809				
Technology Agency of the Czech Republic	Flexible Printed Microelectronics Based on Organic or Hybrid Materials (FLEXPRINT)	1 500 / 59 172				
Technology Agency of the Czech Republic	Functional Dyes for Security Printing	1 290 / 50 888	1 290 / 50 888	1 290 / 50 888	1 290 / 50 888	
Technology Agency of the Czech Republic	National Centre for Competence in Polymer Materials and Technologies for the 21st Century					750 / 29 586
Technology Agency of the Czech Republic	New Biocidal Waterborne Binders and Coatings for Outdoor and Hygienic Interior Applications	858 / 33 846				
Technology Agency of the Czech Republic	Next-Generation Functionally Modified Layered Nanoparticles with Improved Handling and Processing in Polymer Matrices	258 / 10 178	498 / 19 645			

Technology Agency of the Czech Republic	New Directions in Electronics for Industry 4.0 and Medicine 4.0					777 / 30 653
Technology Agency of the Czech Republic	OILSENSE – Detection Systems for Industrial Equipment Based on Large-Area Sensors			900 / 35 503	900 / 35 503	900 / 35 503
Technology Agency of the Czech Republic	Advanced Epoxy Composites with Borane Compounds					540 / 21 302
Technology Agency of the Czech Republic	Propellants with Increased Specific Impulse	1 008 / 39 763	1 347 / 53 136	1 347 / 53 136		
Technology Agency of the Czech Republic	Research Centre for Surface Treatment	1 150 / 45 365				
Technology Agency of the Czech Republic	Supplements for Positive Modulation of the Human Microbiome	613 / 24 181				
Technology Agency of the Czech Republic	Production of Polyglycerol and Its Application in the Manufacture of Alkyds, Polyesters, and Polyurethanes	1 335 / 52 663	1 335 / 52 663	1 315 / 51 874	1 315 / 51 874	
Technology Agency of the Czech Republic	Utilisation of Modern Cyclisation Reactions for the Synthesis of Chemical Specialties	504 / 19 882	504 / 19 882			
Technology Agency of the Czech Republic	Development of Methodological and Technical Procedures to Minimise the Impact of Forestry on Groundwater Quality Due to Excessive Migration of Reactive Forms of Nitrogen and Phosphorus	900 / 35 503	850 / 33 531			
Total		35 268 / 1 391 283	31 211 / 1 231 193	25 107 / 990 396	15 993 / 630 874	19 430 / 766 447

Table 3.3.2 - Contract research activities

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
2print s.r.o.	Research in the Field of Printing Materials			90 / 3 532		
ASIO TECH, spol. s r.o.	Research in the Field of Environmental Processes	70 / 2 768				
Astotec Automotive Czech Republic s.r.o.	Research in the Field of Energetic Materials	91 / 3 580				
Austin Detonator s.r.o.	Research in the Field of Energetic Materials		121 / 4 773			
BIOPHARM, Výzkumný ústav biofarmacie a veterinárních léčiv a.s.	Research in the Field of Substances with Biological Properties					254 / 10 024
BOCHEMIE a.s.	Research in the Field of Polymer Materials	206 / 8 114				
Centrum organické chemie s.r.o.	Research in the Field of Polymer Materials, Fibres, Composites, and Organic Coatings	242 / 9 546				
Colognia press a.s.	Research in the Field of Printing			105 / 4 153	296 / 11 694	502 / 19 809
DEMCAK s.r.o.	Research in the Field of Printing				137 / 5 389	93 / 3 652
ECOCOAL, s.r.o.	Research in the Field of Environmental Processes	339 / 13 365		169 / 6 682		309 / 12 199
EOP Distribuce, a.s.	Research in the Field of Building Materials		60 / 2 387			
Explosia a.s.	Research in the Field of Energetic Materials	358 / 14 105	119 / 4 678			
FARMAK, a.s.	Research in the Field of Precursors for Pharmaceuticals		37 / 1 450			
Feromagnet, s.r.o.	Research in the Field of Inorganic Materials					309 / 12 199
GENERI BIOTECH s.r.o.	Research in the Field of Substances with Biological Properties					233 / 9 190
GEOtest, a.s.	Research in the Field of Environmental Processes	70 / 2 768				
CHEMOTEX Děčín a.s.	Research in the Field of Chemicals for the Engineering Industry	145 / 5 728				
Indorama Ventures Mobility Bohemia s.r.o.	Research in the Field of Environmental Processes			73 / 2 864		
Innovative Sensor Technology, s.r.o.	Research in the Field of Sample Analysis Methodology and Chemical Characterisation			20 / 802	116 / 4 592	113 / 4 449

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

KYOCERA AVX Components s.r.o.	Research in the Field of Capacitors	133 / 5 250				
LACHEPRA s.r.o.	Research in the Field of Substances with Biological Properties		293 / 11 554	72 / 2 838	73 / 2 884	6 / 229
Magna Exteriors (Bohemia) s.r.o.	Research in the Field of Printing					240 / 9 451
Mondi Štětí a.s.	Research in the Field of Sample Analysis Methodology and Characterisation of Chemical Substances and Processes	581 / 22 911		496 / 19 570		
ORLEN UniCRE a.s.	Research in the Field of Sample Analysis Methodology and Characterisation of Chemical Substances and Processes				424 / 16 706	
OZM Research s.r.o.	Research in the Field of Energetic Materials				108 / 4 248	299 / 11 794
PARAMO, a.s.	Research in the Field of Organic Synthesis				484 / 19 093	
PCC MORAVA – CHEM s.r.o.	Research in the Field of Polymer Materials, Fibres, Composites, and Organic Coatings		37 / 1 459			
PLEAS s.r.o.	Research in the Field of Polymer Materials, Fibres, Composites, and Organic Coatings	61 / 2 387				
PYROTECHNICKÁ SLUŽBA s.r.o.	Research in the Field of Energetic Materials					477 / 18 802
SYNPO a.s.	Research in the Field of Printing Materials	375 / 14 797	303 / 11 933			
SYNTHESIA a.s.	Research in the Field of Environmental Processes	85 / 3 341				
Škoda Auto a.s.	Research in the Field of Energetic Materials	212 / 8 353				
Škoda Auto a.s.	Research in the Field of Energetic Materials		97 / 3 819	182 / 7 160		
Škoda Auto a.s.	Research in the Field of Substances with Biological Properties				490 / 19 331	288 / 11 341
TEMPERATOR s.r.o.	Research in the Field of Polymer Materials					48 / 1 909
TOSEDA s.r.o.	Research in the Field of Polymer Materials, Fibres, Composites, and Organic Coatings	145 / 5 728				
Total		3 112 / 122 742	1 066 / 42 052	1 207 / 47 600	2 128 / 83 937	3 170 / 125 047

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:

1. Spin-Off Company LipiDiCa, a.s. – Established in 2023^[1]

Currently, there is no approved non-invasive method for the early detection of pancreatic cancer, which has one of the highest mortality rates among all cancer types. In cases of late diagnosis, effective treatment is virtually non-existent.

Based on the outstanding research results achieved by Prof. Holčápek's team, the company FONS JK Group a.s. expressed interest in collaborating. On 22 January 2022, a Memorandum of Cooperation was signed between the University of Pardubice and FONS JK Group to establish a clear framework for the steps leading to the formation of a spin-off company. Subsequently, on 5 May 2022, a new entity was founded under the name LipiDiCa, a.s. (Lipidomics Diagnostics of Cancer).

By 1 May 2023, UPCE and the principal inventor of the technology acquired a significant equity stake in the company based on a Share Transfer Agreement. The complete transfer of the patent portfolio and European trademark rights from the university has already been finalised under an Intellectual Property Transfer Agreement.

This case serves as a textbook example of successful technology transfer and intellectual property commercialisation from an academic institution to the commercial sector. It holds tremendous potential for medicine on a global scale.

The introduction of a lipidomic test into clinical practice, the subsequent implementation of a national screening programme for high-risk individuals, and the expansion into international markets covered by patents (Europe, Japan, Singapore, and the USA) are expected to have a major societal impact.

A clinical study of the lipidomic test is currently underway^[2]. The establishment of LipiDiCa was recognised with the Neuron Award for Science and Business Collaboration in 2023 (see Table 3.2.1) and is directly linked to the ERC Advanced ONCOLIPID project.

Gender dimension of the outcome: Pancreatic cancer can affect both men and women.

2. Patent – "A Method of Diagnosing Pancreatic Cancer Based on Lipidomic Analysis of a Body Fluid" (EP3514545)^[3]

This patent represents the core technology behind the lipidomic test for pancreatic cancer detection from a blood sample, developed by Prof. Holčápek's team. The patent is closely linked to the LipiDiCa spin-off company, where it has been incorporated as know-how and a non-monetary intellectual property contribution.

²⁹ See Terms definition.

If the clinical study successfully validates the test and it is introduced into medical practice, the societal impact will be tremendous, as it will provide a rapid, non-invasive diagnostic tool for pancreatic cancer and other cancer types.

This innovation addresses a critical gap in cancer diagnostics:

- By the time clinical symptoms appear, it is often too late for effective treatment,
- Survival rates in such cases are extremely low.

The target users of this test include the general population and, in later stages, oncology patients.

Gender dimension of the outcome: The patented lipidomic test is universally applicable to both genders.

3. Patent “How to diagnose cancer based on lipidomics analysis of body fluids” (JP 7086417)

This patent, similar to the previous one, pertains to a diagnostic test for pancreatic cancer, but it is a Japanese patent. The societal relevance of this patent remains very high, and it has been incorporated as a non-monetary intellectual property contribution from UPCE to the LipiDiCa spin-off company, just like the European patent. As with the previous case, the target users include the general population and oncology patients.

Gender dimension of the outcome: The patented lipidomic test is universally applicable to both genders.

4. Patent – “Method for Preparing Submicron and/or Micron Tubes of Crystalline Tungsten Oxide, and Submicron and/or Micron Tubes of Crystalline Tungsten Oxide Prepared by This Method” (308 897)^[4]

Granted on 30 June 2021, this patent describes a two-step, robust, and scalable synthesis of a new type of WO₃ material – specifically, submicron- and micron-sized tubes. This method is unique, as no similar approach for synthesising such tubular WO₃ materials has been described in the scientific literature or protected by prior patents.

This material has high societal relevance for several reasons:

- It is an exceptionally active photocatalyst in the visible spectrum, offering a key advantage over widely used TiO₂-based materials, which function only in the UV spectrum.
- It is applicable in photocatalytic processes, including:
 - Degradation of organic dyes,
 - Removal of pollutants, bacteria, and viruses.
- Due to its large surface area and porosity, it exhibits high photocatalytic conversion rates.
- Compared to nanoscale materials, it is safer, particularly in terms of potential respiratory health risks (especially for lung exposure).

Based on excellent experimental results achieved by Dr. Macák's research team, which confirmed the material's utility and safety, a commercial partner was identified to license the patent – the Czech company PardamNano4Fibers s.r.o., a global leader in the development and production of advanced fibres for filtration, catalysis, and other applications.

In 2023, an exclusive licensing agreement was signed, and since then, the material has been manufactured and marketed. The company is now preparing to launch global sales via Merck's international e-commerce platform.

The **target users** include:

- Environmental industry stakeholders (e.g., wastewater treatment and purification),
- Chemical manufacturing companies,

- End-users of treated water.

Gender dimension of the outcome: The material's application is not gender-dependent.

5. Patent – "System for Measuring Air and Soil Temperature and Humidity with Wireless Data Transmission and Method of Its Manufacture" (309 063)

This patent provides legal protection for an invention related to temperature and humidity detection. Specifically, it covers a system and method designed to measure air and soil temperature and humidity, with wireless data transmission, primarily for use in agriculture, forestry, horticulture, and crop cultivation.

This patent resulted from the SMARTFIELD project (see Chapter 3.3) and represents a significant technological advancement that improves and simplifies the efficient use of water resources in agriculture. The societal impact is highly significant, as precise irrigation control and efficient water management are critical for sustainable development.

Gender dimension of the outcome: Not applicable – use of the patented invention is not gender-dependent.

6. Patent – "Method of Forming a Metallic Conductive Filament and Random Access Memory Device for Carrying Out the Method" (US010879460B2)^[5]

Granted in 2020, this patent describes a novel method for preparing amorphous alloys and depositing thin films at the nanometre scale, specifically for applications in memory cells.

The invention is highly relevant to society, given the growing demand for digital data processing and storage. It represents a completely new approach to data storage, differing from conventional memory storage technologies.

Key advantages of the technology:

- Up to 1.000× faster operation,
- Increased lifespan,
- Up to 10× higher data storage density,
- High application potential in next-generation memory devices.

Despite its promising characteristics, the patent has not yet been licensed. This may be due to the entirely new data storage concept, which would require significant investment in modifying current manufacturing technologies.

Target users:

- Memory device manufacturers,
- End-users of electronic devices incorporating this next-generation memory technology.

Gender dimension of the outcome: Not applicable – use of memory storage devices is not gender-dependent.

7. Patent – "Magnesium Salts of Aspartic Acid Derivatives and Their Use as Hydrogen Peroxide Stabilisers" (309 643)^[6]

Granted in 2023, this patent describes novel compounds (polycarboxylates based on aspartic acid derivatives) designed for stabilising hydrogen peroxide in bleaching baths used for products such as cellulose-based fibres and textiles (cotton, linen, hemp, wood cellulose, etc.).

These new compounds replace water glass as hydrogen peroxide stabilisers in bleaching baths, offering applications in the textile and paper industries.

The high societal relevance of this patent lies in:

- Significant improvements in fibre and fabric quality,
- Elimination of inorganic deposits on bleached materials and processing equipment,
- Corrosion prevention in machinery,
- Economic and technological benefits, as these new stabilisers are:
 - Cost-effective,
 - Simple to manufacture,
 - Derived from widely available chemical industry feedstocks (maleic anhydride and aliphatic amines),
 - Water-based, making them environmentally friendly.

Target users: Companies engaged in textile and paper production.

This patent has already been licensed (see Chapter 3.5 – Technology Transfer).

Gender dimension of the outcome: The technology is not gender-dependent.

8. Utility Model – "System for Measuring Air and Soil Temperature and Humidity with Wireless Data Transmission" (34562)

This utility model describes a printed sensor on a wooden substrate, developed as part of the SMARTFIELD project (see Outcome No. 5 – Patent). The societal relevance of this solution is high, as it represents a low-cost system for monitoring soil conditions. It also offers economic benefits due to wireless data transmission to a data collection unit.

Target users:

- Agricultural enterprises,
- Soil monitoring organisations,
- Related industries, including forestry.

This technology has already been licensed (see Chapter 3.5 – Technology Transfer).

Gender dimension of the outcome: The technology is not gender-dependent.

9. Validated Technology – "Substitution of European Pine for American Pine in the Production of Pulp for Sack Papers" (1466/22)

This verified technological process defines precise parameters for the sulphate pulping of pine wood chips and thoroughly characterises the resulting pulp batch and its potential use as an alternative raw material for sack paper production.

In the Czech Republic, spruce wood is currently the primary raw material for sulphate pulping, while pine wood usage is limited to about 15%. However, given the challenges in securing wood supplies from Russia and Ukraine, it is essential to explore pine wood alternatives to maintain domestic pulp production and industry expertise.

The high societal impact of this technology includes:

- Significant cost savings,
- Up to 10% energy savings in the pulping process by using *Pinus Elliottii* pine from the southeastern USA, which allows for chemical processing at lower temperatures.

The application significance is demonstrated by its successful commercialisation – in 2022, a license was sold to Mondi Štětí, a.s., one of the largest paper producers in the Czech Republic.

Gender dimension of the outcome: The process is not gender-dependent.

10. **Functional Sample / Prototype – "Siccative System – FV3" (FV3-GAMA2-01/008)**

This functional sample represents a vanadium-based siccative, which significantly accelerates the drying and curing of alkyd resins. It is particularly suitable for:

- Solvent-based air-drying coatings,
- Applications in protective coatings.

The societal impact of this result is primarily in eliminating hazardous materials – specifically, removing cobalt from circulation.

Target users:

- Coatings industry,
- Construction,
- Metal surface protection,
- Other related sectors.

The application potential of this technology is confirmed by its commercial success – it was acquired by Borchers GmbH, which subsequently patented the innovation.

Gender dimension of the outcome: The application is not gender-dependent.

HTML links to additional documentation:

[1] <https://www.lipidica.com/>

[2] <https://www.upce.cz/en/clinical-trial-begins-in-czech-republic-to-test-groundbreaking-pancreatic-cancer-detection-method>

[3] <https://register.epo.org/application?number=EP18152687&tab=main>

[4] https://isdv.upv.gov.cz/webapp/resdb.print_detail.det?pspis=PT/2020-592&plang=EN

[5] <https://www.upce.cz/en/nanolayer-improving-the-speed-of-saving-data-receives-us-patent>

[6] https://isdv.upv.gov.cz/webapp/resdb.print_detail.det?pspis=PT/2021-349&plang=EN

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

Type of result ³⁰	Year of application	Name
Spin-Off Company	2023	Lipidica, a.s.
Patent (USA)	2020	Method of Forming a Metallic Conductive Filament and Random Access Memory Device for Carrying Out the Method (US010879460B2)
Patent (EU)	2020	A Method of Diagnosing Pancreatic Cancer Based on Lipidomic Analysis of a Body Fluid (EP3514545)
Patent	2021	Method for the Preparation of Submicron and/or Micron Tubes of Crystalline Tungsten Oxide, and Submicron and/or Micron Tubes of Crystalline Tungsten Oxide Prepared Using This Method (308 897)
Patent	2021	System for Measuring Air and Soil Temperature and Humidity with Wireless Data Transmission and Method for Its Production (309 063)
Patent (JPN)	2022	How to Diagnose Cancer Based on Lipidomics Analysis of Body Fluids (JP 7086417)
Patent	2023	Magnesium Salts of Aspartic Acid Derivatives and Their Use as Hydrogen Peroxide Stabilizers (309 643)
Validated Technology	2022	Substitution of European Pine for American Pine in the Production of Pulp for Sack Papers (1466/22)
Utility Model	2020	Printed Temperature and Humidity Sensor System for Air and Soil (34562)
Functional Sample/Prototype	2021	Siccative System - FV3 (FV3-GAMA2-01/008)

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 transfer of research results (outcomes) into practice is primarily facilitated by the Centre for Technology and Knowledge Transfer (CTKT)^[1], a university-wide unit responsible for:

- Managing industrial property rights,
- Identifying collaboration opportunities with industry and the private sector,
- Administering the Proof-of-Concept project support system^[2].

To enhance the efficiency of research commercialisation, the role of an FChT ambassador for commercialisation was introduced during the evaluation period. Several other initiatives were also implemented, including:

- Partnerships with the Pardubice Business Incubator (P-PINK),
- Collaboration with the Smart Accelerator of the Pardubice Region^[3],
- Cooperation with the Association of the Chemical Industry of the Czech Republic,
- FChT representation in the Regional Innovation Council of the Pardubice Region.

Key Research Commercialisation Outcomes

During the evaluation period, FChT achieved:

- 22 patents (including 4 international patents),
- 26 verified technologies,
- 22 utility models,
- 58 functional samples/prototypes,
- 3 certified methodologies.

In addition to public research funding, FChT secured:

- Over CZK 10.600.000 (approx. EUR 421.000) from contract research,
- Over CZK 5.500.000 (approx. EUR 140.000) in revenue from non-public sources outside grants and contract research.

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.

Typical End-Users of FChT Research Outcomes

The primary beneficiaries of FChT research commercialisation efforts include:

- Commercial entities specialising in materials and nanomaterials
 - *Example:* Pardam Nano4Fibers s.r.o. – collaboration on the development and application of novel nanomaterials.
- Companies from the industrial chemistry sector
 - *Example:* CHEMOTEX Děčín a.s. – cooperation on the development of new production processes.
- Companies in the paper industry
 - *Example:* Mondi Štětí, a.s. – collaboration on the implementation of new technologies and production optimisation.
- Companies in the coatings industry
 - *Example:* Borchers GmbH – partnership in the development of new coating materials.
- Companies in the printing and packaging industry
 - *Examples:* AGENTURA OSMA, a.s., OTK GROUP, a.s. – collaboration on the development and adoption of innovative printing technologies.

Research outcomes from FChT are primarily commercialised through licence sales. However, during the evaluation period, a major commercialisation milestone was also achieved through the establishment of a spin-off company. The following selection of R&D&I outcomes demonstrates the effective transfer of research results into practice:

1. Establishment of the Spin-Off Company LipiDiCa, a.s.

The most significant example of research commercialisation during the evaluation period was the founding of the spin-off company LipiDiCa, a.s., which aims to bring the lipidomic test for early pancreatic cancer diagnosis into clinical practice.

LipiDiCa, a.s. was established by UPCE and FONS JK Group a.s., with UPCE contributing intellectual property as an equity stake, including the European and Japanese patents for the lipidomic test.

The revenue from the Intellectual Property Transfer Agreement amounted to CZK 1.682.000 in the final year of the evaluation period. In addition, UPCE retains a significant shareholding in the spin-off company.

The founding of LipiDiCa is a textbook example of successful technology transfer. A clinical study is currently underway, and if it proves the test's effectiveness, it could lead to a breakthrough in pancreatic cancer treatment.

2. Sale of Technology – Functional Sample “Siccative System – FV3”. Technology Transfer Agreement, Brochers, GmbH

As part of research conducted at FChT, a method was developed for preparing oxopolymerisation-based drying coatings containing vanadium compounds with compensating sulfonic acid anions. These siccatives significantly accelerate the drying and curing of alkyd resins and are suitable for:

- Solvent-based coatings,
- High-solid coatings,
- Coatings with alkyd resins modified by other monomers.

A Czech patent application for this technology was filed on 24 June 2020. Following negotiations with Borchers GmbH, an industrial company specialising in coating additives, a Patent Transfer Agreement was signed on 18 June 2021, generating revenue of CZK 2.052.000.

3. Licence Agreement – Mondi Štětí, a.s.

An example of commercialising a verified technology in the paper and pulp industry is the result “Substitution of European Pine for American Pine in the Production of Pulp for Sack Papers” (see Chapter 3.4).

Following negotiations with Mondi Štětí, a.s., this verified technology was commercialised through an exclusive licence agreement, signed on 24 November 2022. The agreement generated revenue of CZK 500.000.

4. Licence Agreement – AGENTURA OSMA, a.s.

A successful example of commercialising research in printing technology is a fully printed security feature that combines specific optical, electrical, and other physical properties.

This research outcome was commercialised through negotiations with AGENTURA OSMA, a.s., a company specialising in the printing of premium self-adhesive labels for various products (cosmetics, food, wine, beer). The licence agreement was signed on 30 November 2022, generating revenue of CZK 320.000.

5. Licence Agreement – Pardam Nano4Fibers s.r.o.

The commercialisation of the Czech patent No. 308897 “Method for Preparing Submicron and/or Micron Tubes of Crystalline Tungsten Oxide” (see Chapter 3.4) was realised through a licence agreement with Pardam Nano4Fibers s.r.o., signed on 20 February 2023 for a period of 20 years.

The agreement covers the transfer of exclusive licence rights for the patented technology. Compensation is provided through royalties on product sales or services based on the licensed intellectual property.

In the final year of the evaluation period (which was also the year of the agreement's signing), minimum contractual royalties of CZK 10.000 were generated. However, higher revenues are expected in the coming years following the market introduction of the licensed product.

HTML links to additional documentation:

[1] <https://www.upce.cz/en/ctkt/about-us>

[2] <https://www.upce.cz/en/proof-of-concept-projects>

[3] <https://paradnikraj.cz/en/regional-development/regional-innovation-strategies/smart-akcelerator-pardubicky-kraj-ii/>

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 Agreement for a Patent, PYROTECHNICKÁ SLUŽBA s.r.o. (doc. Ing. Robert Matyáš, Ph.D.)	349 / 13 784				
Licence Agreement, HARDWARIO s.r.o. (doc. Ing. Tomáš Syrový, Ph.D.)		156 / 6 165			
Non-Exclusive Licence Agreement for Know-How, CHEMOTEX Děčín a.s. (prof. Ing. Hrdina, CSc.)		40 / 1 578			
Agreement on the Adjustment of Co-Ownership Rights to an Invention, Centrum organické chemie s.r.o. (doc. Ing. Tomáš Syrový, Ph.D.)		23 / 915			
Agreement on the Transfer of Patents and Rights to Project Outcomes (ALFA), Cayman Pharma s.r.o. (prof. Ing. Aleš Imramovský, Ph.D.)		120 / 4 734			
Collaboration Agreement, The Avant Guard Limited (CN) (prof. Ing. Hrdina, CSc.)			23 / 889		
Material Transfer and Confidentiality Agreement, Borchers GmbH (DE) (doc. Ing. Jan Honzíček, Ph.D.)			26 / 1 034		
Agreement on the Exercise of Co-Ownership Rights to Project Outcomes, OTK GROUP, a.s. (doc. Ing. Tomáš Syrový, Ph.D.)			4 / 158		
Technology Transfer Agreement, Borchers GmbH (DE) (doc. Ing. Jan Honzíček, Ph.D.)			2 052 / 80 963		
Material Supply Agreement, AVEFLOR, a.s. (doc. Ing. Tomáš Weidlich, Ph.D.)			5 / 197		
Licence Agreement, CHEMOTEX Děčín a.s. (prof. Ing. Radim Hrdina, CSc.)			20 / 789		
Licence Agreement, DEMCAK s.r.o. (doc. Ing. Tomáš Syrový, Ph.D.)				123 / 4 849	
Licence Agreement, Mondí Štětí a.s. (Ing. Jan Gojný, Ph.D.)				500 / 19 724	
Licence Agreement, Multi-FAS spol. s r.o. (Ing. Max Fraenkl, Ph.D.)				80 / 3 156	
Licence Agreement, AGENTURA OSMA a.s. (doc. Ing. Tomáš Syrový, Ph.D.)					320 / 12 623
Licence Agreement, PARDAM NANO4FIBERS s.r.o. (Dr.-Ing. Jan Macák)					10 / 394
Agreement on the Transfer of Intellectual Property Rights to Technologies, FONS JK Group, a.s. (prof. Ing. Michal Holčápek, Ph.D.)					1 682 / 66 344
Donations	188 / 7 427	123 / 4 871	97 / 3 843	375 / 14 783	285 / 11 243
Total	349 / 13 784	339 / 13 391	2 110 / 83 240	723 / 28 517	2 012 / 79 362

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:

In addition to its primary mission of teaching and research, FChT places significant emphasis on public engagement and science outreach. During the evaluation period, the faculty organised numerous annual flagship events, including:

- Open Days,
- Science and Technology Festival for Youth,
- Science and Technology in School Courtyards,
- European Researchers' Night,
- Science Point.

Several special outreach initiatives were also held. The most significant activities during the evaluation period include:

1. Public Lecture by a Nobel Laureate^[1]

In 2023, FChT hosted a lecture by Prof. Jean-Marie Lehn (*1987 Nobel Laureate in Chemistry*), which was open to staff, students, and the general public, including secondary school pupils and participants of the Pharmacokinetics Seminar. The event was a remarkable success, aiming to promote chemistry and enhance its attractiveness, particularly for prospective students.

2. Establishment of the FChT Demonstration Laboratory^[2]

Since 2021, FChT has operated a demonstration laboratory serving as a hands-on learning centre for chemistry, primarily targeted at primary and secondary school students. The laboratory is used for public science outreach events, workshops and practical training sessions, student excursions, and preparation of educational programmes for SFÉRA Pardubice (see below).

3. Chemistry Race^[3]

“Chemiklání” – Chemistry Race is a one-day chemistry competition for teams of 3–5 secondary school students, jointly organised by FChT and the student association Alumni Scientiae Bohemicae. The competition is co-announced by the Czech Ministry of Education, Youth and Sports (MŠMT).

Competition format:

- Teams race against time to solve a set of theoretical chemistry problems.
- The team solving the most problems wins.
- Participants compete in two categories:
 - Category B – younger students (*Years 1–2 of secondary school*),
 - Category A – all secondary school years.

The competition consists of a single in-person round in Pardubice, and team selection is based on an initial application task.

Notable achievement: The competition has been adopted by the University of Cambridge, underscoring its prestige and success [3].

4. **“Searching for the Best Young Chemist in the Czech Republic” Competition**^[4]

This is a four-round competition for 8th and 9th-grade primary school pupils, culminating in the national finals. The competition is:

- Organised annually,
- Announced by the Czech Association of the Chemical Industry,
- Supported by the Ministry of Education, Youth and Sports (MŠMT),
- Hosted and co-organised by FChT.

The competition's growing popularity is evident from participation numbers, which ranged from 17.000 to 21.000 contestants per year during the evaluation period.

5. **Secondary School Research Projects (SOČ) and Student Research Activities (SVOČ)**^[5]

FChT actively supports secondary school and university students in engaging with R&D&I:

- Secondary School Research Projects (SOČ):
 - Students work on research projects under the mentorship of FChT academics.
 - The competition is announced by MŠMT and supervised by the National Institute for Children and Youth.
- Student Research Activities (SVOČ):
 - University students undertake scientific research projects beyond their coursework.
 - The results are presented at a public student research conference.

6. **SFÉRA Pardubice**^[6]

SFÉRA Pardubice is an organisation for informal and interest-based education, based in the Automatic Mills building in Pardubice. It operates as a registered association (Centrální polytechnické dílny z.s.) and promotes lifelong learning by bridging the public, private, and non-profit sectors.

FChT's role in SFÉRA Pardubice includes:

- Participation in its governing body (*represented by Prof. Němec*),
- Designing and delivering educational programmes,
- Strengthening collaboration with the city of Pardubice.

SFÉRA plays a key role in popularising technical education.

7. **University of the Third Age (U3V)**^[7]

This lecture and laboratory series introduces cutting-edge scientific topics to the general public, particularly in an accessible and engaging format. Lecturers include FChT academics and industry experts. U3V promotes lifelong learning, particularly for older adults, but is not limited to seniors.

8. **Chemistry Summer Day Camp**^[8]

Since 2023, FChT has organised a summer day camp focused on chemistry, aimed at secondary school and grammar school students. The camp provides a hands-on learning environment where participants gain experience in modern laboratory work, explore various chemistry disciplines, and engage in exciting chemistry experiments.

9. FChT on UPCE On Air^[9]

FChT experts regularly appear on the UPCE On Air podcast, where they discuss their research, teaching activities, and other professional topics. This platform serves as an opportunity to popularise science and communicate the faculty's expertise to a broader audience.

10. European Researchers' Night^[10]

Since 2005, this nationwide event has taken place at universities across the Czech Republic, including FChT. The faculty contributes to the programme by organising laboratory demonstrations and public presentations of various chemistry disciplines, offering visitors an engaging insight into the world of science.

HTML links to additional documentation:

- [1] <https://www.upce.cz/en/the-university-of-pardubice-welcomed-the-nobel-prize-winner>
- [2] <https://fcht.upce.cz/en/fcht/demonstration-laboratory>
- [3a] <http://chemistryrace.com/about-the-competition/>
- [3b] <https://outreach.ch.cam.ac.uk/chemistry-race>
- [4] <https://fcht.upce.cz/en/the-new-king-of-young-chemists>
- [5] <https://fcht.upce.cz/en/fcht/cooperation-with-secondary-schools>
- [6] <https://www.sferapardubice.eu/en/>
- [7] <https://fcht.upce.cz/en/fcht/university-of-the-third-age>
- [8] <https://fcht.upce.cz/en/fcht/chemistry-camp>
- [9] <https://fcht.upce.cz/en/fcht/fcht-by-upce-on-air>
- [10] <https://www.upce.cz/o-akci>

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, FChT received predominantly high ratings, with most criteria assessed as 5 – Excellent or 4 – Very Good. The only exception was Criterion 3.9 (Strategy for Setting Up and Supporting Spin-Off Firms or Other Forms of Commercialisation of R&D&I Results), which received a lower score of 2 – Average.

During the evaluation period, **FChT implemented the following measures** in response to the recommendations:

Recommendations for Sections 3.2, 3.3, and 3.4

"Prepare an offer for industrial partners; it should be available online."

- FChT has prepared web-based resources to facilitate collaboration with industrial partners, including detailed descriptions of key research facilities and instrumentation (see supporting materials^[1]).

"Extend international cooperation (search for strategic partners from the chemical industry)."

- FChT has joined multiple international consortia under Horizon Europe projects, leading to significant collaborative outputs with foreign partners. During the evaluation period, FChT participated in five Horizon projects as a consortium member.

"Encourage industrial partners to fund scholarships for MSc and PhD students to carry out cooperation projects."

- A collaboration agreement is being prepared with On Semiconductor, along with the development of a study programme focused on semiconductors. During the evaluation period, memoranda of understanding were signed with industrial partners, including Pfizer.

Recommendations for Sections 3.5 and 3.6

"Intensify the cooperation with the Centre for Technology and Knowledge Transfer."

- The role of an FChT ambassador for technology transfer was established within CTKT, tasked with liaising with research teams, identifying commercially viable results, and acting as an intermediary between FChT staff and CTKT.

"Intensify the system of cooperation between several units via a centre of excellence – collaboration between faculties to promote multidisciplinary research."

- During the evaluation period, interfaculty seminars were held, and PhD students were integrated into the university-wide doctoral school, where they were exposed to cross-disciplinary topics, including intellectual property protection, knowledge transfer, and commercialisation processes. Work began on an interfaculty doctoral study programme (a collaboration between FChT and the Faculty of Health Studies). Additionally, an internal directive was introduced to support early-career researchers and those with potential for excellence.

"Identify the strengths and focus on the development in topical areas of research."

- In addition to excellent teams in basic research, FChT established excellent teams in applied research at the beginning of the evaluation period. These teams received targeted financial support, leading to an increase in applied research projects and prestigious awards (see Chapter 3.2).

Recommendations for Sections 3.7, 3.8, and 3.9

"Intensify patent application activities in cooperation with industrial partners."

- The number of patents in collaboration with industrial partners increased in line with the growth of applied research projects and FChT's participation in Horizon Europe consortia.

"Encourage researchers and/or students to launch spin-offs (e.g. by organising thematic workshops)."

- The doctoral school incorporated training on R&D&I commercialisation, and CTKT organised dedicated courses on this topic. During the evaluation period, the spin-off company LipiDiCa, a.s. was established and is actively promoted as a model case of a successful spin-off.

"Pay more attention and provide greater support for research commercialisation."

- In response, FChT appointed an ambassador for technology transfer within CTKT and joined key industry councils and clusters focused on knowledge transfer, including:
 - The Regional Innovation Council of the Pardubice Region,
 - The Smart Accelerator of the Pardubice Region,
 - The Pardubice Business Incubator.

"Develop interactions with the non-academic sphere even further, especially at the international level."

- Memoranda of cooperation were signed with major international companies, such as Pfizer and On Semiconductor^[2]. Research teams engaged in multiple international projects in consortia with industrial partners, leading to commercialised outputs (see Chapter 3.5).

"Stimulate development in the field of applied research."

- This recommendation was addressed by establishing and financially supporting excellent teams in applied research. Additionally, internal regulations were introduced to support early-career researchers and those with potential for excellence.

HTML links to additional documentation:

[1] <https://fcht.upce.cz/en/fcht/cooperation-with-industry>

[2] <https://fcht.upce.cz/en/representatives-of-the-faculty-management-held-talks-at-onsemi>

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)
FChT Website	3.1	https://fcht.upce.cz/en
FChT Statute	3.1	Statut FChT 01 01 24 - fin-Aj-fin_92343.pdf
FChT Annual Activity Reports	3.1	https://fcht.upce.cz/en/fcht/annual-reports
Oncolipidomics: Why is lipidomic dysregulation pattern in blood similar for various cancers?	3.1; 3.3	https://cordis.europa.eu/project/id/101095860
Towards New Generation of Solid-State Photovoltaic Cell: Harvesting Nanotubular Titania and Hybrid Chromophores	3.1; 3.3	https://cordis.europa.eu/project/id/638857
LIPIDICA.COM – New method for early pancreatic carcinoma detection	3.1; 3.4	https://www.lipidica.com/
Excellent Scientific Teams	3.2	https://fcht.upce.cz/en/fcht/science-and-research-at-the-faculty-of-chemical-technology
University of Pardubice Scientists among the Most Cited in the World	3.2	https://www.upce.cz/en/university-of-pardubice-scientists-among-the-most-cited-in-the-world
October 2023 data-update for "Updated science-wide author databases of standardized citation indicators"	3.2	https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/6
Prof. Holčápek receives prestigious USA award	3.2	https://www.upce.cz/en/scientist-michal-holcapek-receives-the-herbert-j-dutton-award-in-the-usa
The Analytical Scientist - The Power List 2020	3.2	https://theanalyticalscientist.com/power-list/2020
TechConnect Innovation Awards	3.2	https://www.techconnectworld.com/World2019/participate/innovation/awards.html
The Minister's Award also went to our faculty	3.2	https://fcht.upce.cz/en/the-ministers-award-also-went-to-our-faculty
Lipidica, a.s., Neuron Award 2023 in connecting science and business	3.2	https://www.nadaceneuron.cz/en/person/lipidica-as
Scientist from the University of Pardubice receives prestigious European grant for research on lipids	3.3	https://www.upce.cz/en/scientist-from-the-university-of-pardubice-receives-prestigious-european-grant-for-research-on
Positively charged heteroboranes – CEP – TA ČR Starfos	3.3	https://old.starfos.tacr.cz/en/project/LL2309
MADRAS – Advanced materials and processing in organic electronics	3.3	https://madras-project.eu/
IBAIA – Improved water quality monitoring solutions	3.3	https://ibaia.eu/
Joint Industrial Data Exchange Pipeline	3.3	https://www.iidep.eu/
Smart sensors and self-healing functionalities embedded for battery longevity with manufacturability and economical recyclability	3.3	https://www.salamander-eu.com/
Sensor to Monitor Battery Condition, Prolong Battery Life, and Prevent Ignition	3.3	https://www.upce.cz/en/sensor-to-monitor-battery-condition-prolong-battery-life-and-prevent-ignition
A portable MicroNanoBioSystem and Instrument for ultra-fast analysis of pathogens in food: Innovation from LOVE-FOOD lab prototype to a pre-commercial instrument	3.3	https://cordis.europa.eu/project/id/687681/results

Chalcogenide films doped with rare-earth ions for gas sensing in the mid-infrared spectral region	3.3	https://fcht.upce.cz/en/projekt/1033696
UPCE smart sensors to save water usage	3.3	https://www.upce.cz/en/smart-sensors-from-the-university-of-pardubice-to-save-water-consumption
Clinical trial begins in Czech Republic to test groundbreaking pancreatic cancer detection method	3.4	https://www.upce.cz/en/clinical-trial-begins-in-czech-republic-to-test-groundbreaking-pancreatic-cancer-detection-method
European Patent Register – EP3514545	3.4	https://register.epo.org/application?number=EP18152687&tab=main
Industrial Property Office – Patent Application Number 2020-592	3.4	RESDB
US Patent for Nanolayer Improving the Speed of Saving Data	3.4	https://www.upce.cz/en/nanolayer-improving-the-speed-of-saving-data-receives-us-patent
Industrial Property Office – Patent Application Number 2021-349	3.4	RESDB
Centre for Technology and Knowledge Transfer	3.5	https://www.upce.cz/en/ctkt/about-us
Proof-of-Concept Projects	3.5	https://www.upce.cz/en/proof-of-concept-projects
Smart Accelerator	3.5	https://paradnikraj.cz/en/regional-development/regional-innovation-strategies/smart-akcelerator-pardubicky-kraj-ii/
The University of Pardubice welcomed the Nobel Prize winner	3.6	https://www.upce.cz/en/the-university-of-pardubice-welcomed-the-nobel-prize-winner
FChT Demonstration Laboratory	3.6	Demonstration Laboratory Univerzita Pardubice
Chemistryrace – About the Competition	3.6	http://chemistryrace.com/about-the-competition/
University of Cambridge – Chemistry Race, Outreach	3.6	https://outreach.ch.cam.ac.uk/chemistry-race
The New King of Young Chemists	3.6	The New King of Young Chemists Univerzita Pardubice
Cooperation with Secondary Schools	3.6	https://fcht.upce.cz/en/fcht/cooperation-with-secondary-schools
SFÉRA Pardubice (no translation, as it's a proper name)	3.6	https://www.sferapardubice.eu/en/
University of the Third Age	3.6	https://fcht.upce.cz/en/fcht/university-of-the-third-age
Day Camp for Secondary School Students	3.6	https://fcht.upce.cz/en/fcht/chemistry-camp
FChT on UPCE On Air	3.6	https://fcht.upce.cz/en/fcht/fcht-by-upce-on-air
European Researchers' Night at UPCE	3.6	O Noci vědců Univerzita Pardubice
Cooperation with Industry	3.7	https://fcht.upce.cz/en/fcht/cooperation-with-industry
Faculty Representatives Conduct Meeting with Onsemi	3.7	https://fcht.upce.cz/en/representatives-of-the-faculty-management-held-talks-at-onsemi

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: Faculty of Economics and Administration (FEA)

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 mission of the Faculty is to prepare professionals in the fields of economics and management for positions in public administration and the business sector. The Faculty focuses on high-quality education, the practical application of knowledge, and active engagement in research, enabling students to gain valuable experience and skills. In this way, the Faculty contributes to regional development and responds to the challenges of the modern labour market.

The vision of the Faculty of Economics and Administration (FES) is defined in the **Strategic Plan of FES for the period from 2021 onwards**. The Faculty aspires to be a respected institution that:

- **educates economists for managing businesses and the state of the future**, with an emphasis on an **individual approach**; and
- **creates an environment where creativity and research can thrive**, allowing everyone to fully realise their potential.

To achieve this vision, FES has set three key development priorities. These priorities are based on values that are important to the Faculty, its staff, and students. They aim to create a supportive environment for studying and working while fulfilling strategic goals and the Faculty's vision. They are encapsulated in statements that define the Faculty's aspirations:

- **Priority FES1:** A Faculty providing high-quality education that enhances students' employability
- **Priority FES2:** A Faculty keeping pace with scientific research and innovation

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

- **Priority FES3:** A Faculty fostering natural collaboration and continuous improvement.

The Faculty provides high-quality education in study programmes focused on **economics and management, finance, public economics, systems engineering, and informatics**. These programmes have been developed in cooperation with employers in the Pardubice region to align with labour market needs and equip students with essential competencies for success in both domestic and international competition.

In accordance with its strategy, the Faculty also engages in **scientific, research, and creative activities**, maintaining a **balanced combination of basic and applied research**. This enables academics to explore socially significant topics, participate in international research networks and teams, and contribute to valuable findings that address both global and local societal challenges. Key research areas include:

- Smart cities,
- Digitalisation of public administration,
- Circular and regenerative economy,
- Determination of effective decision-making processes in businesses and the public sector,
- Effective state interventions in market and non-market structures aimed at increasing overall societal welfare.

The **research outcomes and expertise** gained are also applied in the so-called **third mission** of universities and faculties, which FES continuously fulfils. This includes **contract research projects** that help regional authorities effectively address their tasks, as well as **public engagement activities**, such as lifelong learning programmes (e.g. the University of the Third Age), various training courses for the public and private sectors, and an extensive programme of lectures and outreach initiatives. Many Faculty members serve in public institutions and act as expert advisors.

Number of Study Programmes

The number of study programmes has remained stable. Over the past five years, nearly all study programmes have been restructured. The original programmes were discontinued and successfully replaced with new ones. These changes were implemented in response to industry demands as well as feedback from students and graduates. The success of this transition is evidenced by a significant decrease in student dropout rates, improved study progression and graduation rates, and a reduction in the unemployment rate among graduates.

The Faculty also offers professionally oriented **bachelor's programmes** and several **joint-degree, double-degree, and English-taught programmes**.

Organisational Structure of FEA

The organisational structure of FEA complies with legal regulations:

- The Faculty is headed by the **Dean**, supported by four **Vice-Deans** (for Internal Affairs, Internationalisation, Research and Creative Activities, and Education and Students) and the **Faculty Secretary**.
- The **highest self-governing body** of the Faculty is the **Academic Senate**, with additional governance provided by the **Scientific Board** and the **Study Programmes Board**, which oversees academic affairs.
- The **Dean's Advisory Board (Grémium)** serves as a consultative body comprising leading representatives of state institutions, regional public administration, and major national and international enterprises.

The Faculty consists of five **Institutes**:

- **Institute of Economic Sciences,**
- **Institute of Business Economics and Management,**
- **Institute of Administrative and Social Sciences,**
- **Institute of Mathematics and Quantitative Methods,**
- **Institute of Systems Engineering and Informatics.**

In 2020, the **Science and Research Centre** was established.

Faculty Size and Number of Staff

The Faculty has undergone **significant personnel restructuring** over the past five years. There are no staff members in lecturer-only positions – **all employees engage in both teaching and research**. Between 2019 and 2023, the number of staff aged over 70 declined, while a slight increase was observed in the youngest age category (under 29), indicating the beginning of a generational renewal process. The **largest proportion of staff** remains in the **40–49 age group**.

The total number of academic staff has **slightly decreased**, while new staff have been recruited to support **international students, external communication, and project management**. The Faculty has also employed **postdoctoral researchers**, and the professional development of staff has progressed in accordance with individual career plans. The average student-to-academic staff ratio is **38 students per academic staff member**.

Number of Students

The number of students fluctuates but shows an **overall increasing trend**. Each year, the Faculty admits approximately **800 students into first-year programmes**, selected from over **3,000 applicants**, primarily through an entrance examination.

Table 3.1.4 also includes students at the **University of the Third Age**, which is part of the Faculty's **lifelong learning programme**. This initiative provides senior citizens and other interested individuals with the opportunity to expand their knowledge in economics, humanities, and current societal issues. Lifelong learning is increasingly vital in modern society as it fosters **intergenerational dialogue, enhances personal development, and contributes to building a knowledge-based society**. The Faculty's initiative thus demonstrates the University's commitment to **accessible education for all, regardless of age**.

Table 3.1.1 – Staffing per FTE²

Academic / Professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	2.5/1	2.51/1	3.38/1	3.58/0.83	3.27/0.92	15.24/4.75
Associate Professor	16.71/8.5	17.59/9.7	17.17/9.75	16.8/8.73	13.63/7.88	81.9/44.56
Assistant Professor	40.97/17.27	39.65/16	37.35/15.38	36.13/14.91	32.5/13.73	186.6/77.29
Assistant	3.87/1.45	4.25/1.5	5.56/1.89	8/3.52	5.85/2.44	27.53/10.8
R&D Personnel ³						
Researchers in other categories ⁴	0.67/0	0.58/0		0.92/-	1.05/0.13	3.22/0.13
Technical and economic staff ⁵	13.00/11.05	13.45/11.34	14.09/12.04	14.62/13.20	14.04/12.59	69.2/60.22
Scientific, research and development staff involved in teaching activities						
Early career researchers ⁶	9.42/5.02	8.92/3.81	9.22/3.35	11.38/3.77	10.66/3.39	49.6/19.34
Total ⁷	77.72/39.27	78.03/39.54	77.55/40.06	80.05/41.19	70.34/37.69	383.69/197.75

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											3	1
Associate Professor			2		4	2	4	3	5	4	2	
Assistant Professor			16	9	20	6	7	5			1	
Assistant	2		2	2			1				1	
R&D Personnel ⁹												
Researchers in other categories ¹⁰					1							
Technical and economic staff ¹¹			5	3	5	4	3	3	2	2		
Scientific, research and development staff involved in teaching activities												
Early career researcher ¹²	2		10	6								
Total ¹³	2		25	14	30	12	15	11	7	6	7	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.

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					2	-	1	1	-	-	2	
Associate Professor			2		7	3	2	2	4	3		
Assistant Professor	1		8	4	21	7	5	4	2	1		
Assistant	2		5	3							1	
R&D Personnel ¹⁵												
Researchers in other categories ¹⁶					2	1						
Technical and economic staff ¹⁷			2	2	9	8	3	3	3	3		
Scientific, research and development staff involved in teaching activities												
Early career researcher ¹⁸	3		11	5								
Total ¹⁹	3		17	9	41	19	11	10	9	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.

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	1251	823	1379	886	1298	862	1273	800	1280	799	6481	4170
Master's ²⁰	309	221	385	269	429	296	393	266	474	293	1990	1345
Doctoral	28	10	28	9	28	8	29	9	34	7	147	43
Lifelong Learning Courses	36	30	40	37	68	61	63	56	100	83	307	267
Total	1624	1084	1832	1201	1823	1227	1758	1131	1888	1182	8925	5825

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	10/1	1/0	10/1	1/0	11/1	1/0	11/1	1/0	12/1	2/0		
Master's	6/2	0/0	6/2	0/0	7/2	0/0	7/2	0/0	9/2	0/0		
Doctoral	4/3	0/0	4/3	0/0	4/3	0/0	4/3	0/0	4/3	0/0		
Lifelong Learning courses	1/0	0/0	1/0	0/0	1/0	0/0	1/0	0/0	1/0	0/0		
Total	21/6	1/0	21/6	1/0	23/6	1/0	23/6	1/0	26/6	2/0		

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		Zvolte položku.	28
	1.2 Computer and information sciences	28	Balanced basic and applied 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.	
	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 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.	72
	5.2 Economics and Business	40	Balanced basic and applied research	
	5.3 Education	0	Zvolte položku.	
	5.4 Sociology	0.2	Balanced basic and applied research	
	5.5 Law	0.8	Balanced basic and applied research	
	5.6 Political science	25	Balanced basic and applied research	
	5.7 Social and economic geography	5.5	Balanced basic and applied research	
	5.8 Media and communications	0.5	Balanced basic and applied research	
	5.9 Other social sciences	0	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:

FEA is among the leading economics faculties with a **strong regional impact in education**. In terms of research, it ranks among **Europe-recognised institutions** in selected disciplines. One area of excellence is artificial intelligence research, led by **Professor Petr Hájek**, whose team has produced world-class results. Another highly acclaimed research team focuses on circular and regenerative economy, led by **Associate Professor Viktor Prokop**, whose research has significant Europe-wide recognition. The third centre of excellence at the Faculty is dedicated to evidence-based decision-making and digital transformation, employing advanced data processing and visualisation methods. This team is led by **Professor Jitka Komárková**.

The Faculty leadership recognises the importance of **supporting young researchers** and has therefore established two additional research teams led by **early-career researchers under 33 years of age**.

- The **first team**, led by **Dr Ondřej Kuba**, focuses on **state interventions through public policies** at national and regional levels.
- The **second team**, led by **Dr Kateřina Příhodová**, is dedicated to **modern technologies in smart cities**.

The Faculty has developed a comprehensive and long-term support system for its research teams, providing financial stability, necessary resources, and flexible adjustments to teaching duties.

All of these research teams consist of **academic staff from FEA** and actively **collaborate with prestigious national and international institutions** across Europe and beyond. A significant number of FEA researchers also participate in **EU-funded COST networks**.

The **strong reputation of FEA researchers** is further demonstrated by their membership in **editorial boards** of academic journals published in **New Zealand, the UK, Romania, Poland, Lithuania, Slovakia, and the Czech Republic**, their participation in **invited lectures**, and their **involvement in international project proposal teams**.

Many FEA researchers receive invitations to **renowned international institutions** to establish collaborations, deliver expert presentations, and serve on scientific committees of international congresses and conferences.

Examples of International Research Networks

- **Researchers' Excellence Network (RENET)** – Established at the end of 2015, this international research network is coordinated by **Šiauliai University, Lithuania**. It connects researchers from almost 50 institutions across 24 countries, including the USA, Taiwan, South Korea, Indonesia, India, the Netherlands, Austria, Italy, Spain, the Czech Republic,

Slovakia, Slovenia, Croatia, Romania, Serbia, North Macedonia, Turkey, Poland, Latvia, Belarus, Ukraine, and Lithuania.

- **The Network of Institutes and Schools of Public Administration in Central and Eastern Europe (NISPAcee)** – Established in response to the growing role of public administration during the post-Soviet political and economic transition in Central and Eastern Europe (CEE). Over its 25 years of existence, NISPAcee has made remarkable contributions to the development of national and regional public administration and local governance practices in the CEE region.
- **Data Analytics in Finance** – A research network focused on collaborative education in data science for finance, involving: Vilniaus Universitetas, Lithuania, LUMSA University, Rome, Italy, University of Nicosia, Cyprus.
- **Sentiment Analysis Research** – Conducted within an international research network comprising: IDRAC Business School Lyon (France), IPAG Business School Paris (France), Teesside University (UK), and Nova University of Lisbon (Portugal).

A review of invited lectures by FEA researchers demonstrates the Faculty's expertise across its key disciplines. The selected examples also highlight broad geographical coverage, spanning the entire European Union and other key countries where FEA maintains partnerships with universities.

The **most significant recognition of the Faculty's research excellence** is reflected in **citations in leading scientific journals**. Professor **Petr Hájek** has consistently produced **outstanding research results**, as evidenced by his **repeated inclusion among the world's top 2% of scientists** in the prestigious **Stanford/Elsevier's TOP ranking** (since 2020).

Table 3.2.1 – Prestigious R&D&I awards granted during the evaluation period^[1]

Name, surname and title(s) of the evaluated unit's staff member	Name of the award	Awarding institution
Petr Hájek, prof. Ing. Ph.D.	Rector's Award for a Publication in a Journal with a High AIS Factor (2019)	University of Pardubice
Viktor Prokop, doc. Ing. Ph.D.	Rector's Award for Publication Activity (2019)	University of Pardubice
Viktor Prokop, doc. Ing. Ph.D.	Best Paper Award (2019) at the IT, Communication and Technology for Better Life Conference, Bangkok, Thailand	University of Malaysia, Research Synergy Institute
Petr Hájek, prof. Ing. Ph.D.	TOP 2 % Scientists (2020)	Stanford/Elsevier
Faculty of Economics and Administration, University of Pardubice	Award for Long-Term Collaboration (2021)	Vilnius University
Petr Hájek, prof. Ing. Ph.D.	TOP 2 % Scientists (2021)	Stanford/Elsevier
Petr Hájek, prof. Ing. Ph.D.	TOP 2 % Scientists (2022)	Stanford/Elsevier
Viktor Prokop, doc. Ing. Ph.D.	Best Paper Award for a Publication in a Journal with a High AIS Factor in Co-Authorship with Researchers from the School of Business and Governance, TalTech, Estonia (2023)	School of Business and Governance, Tallinn University of Technology, Tallinn, Estonia
Petr Hájek, prof. Ing. Ph.D.	TOP 2 % Scientists (2023)	Stanford/Elsevier
Renáta Myšková, doc. Ing. Ph.D.	Medal for Long-Term Contribution to the Development of the Faculty of Management and Informatics (2023)	Faculty of Management and Informatics, University of Žilina

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
Petr Hájek, prof. Ing. Ph.D.	<i>Neurocomputing</i> , 0925-2312; <i>Evolving Systems</i> , 1868-6478; <i>Acta Informatica Pragensia</i> , 1805-4951; <i>SciPap</i> , 1804-8048
Viktor Prokop, doc. Ing. Ph.D.	<i>Journal of Innovation Economics & Management</i> , 2032-5355; <i>Managing Global Transitions</i> , 1854-6935; <i>SciPap</i> , 1804-8048
Jan Stejskal, prof. Ing. Ph.D.	<i>International Journal of Economics, Business and Entrepreneurship</i> , 2615-6873; <i>International Journal of Economics and Statistics</i> , 2309-0685; <i>SciPap</i> , 1804-8048; <i>Socialiniai tyrimai / Social Research</i> , 1392-3110
Beáta Mikušová Meričková, prof. Ing. PhD.	<i>Central European Journal of Public Policy</i> , 1802-4866
Čapek Jan, prof. Ing. CSc.	<i>Journal of Applied Mathematics and Computation Mechanics</i> , 2353-0588
Renáta Myšková, doc. Ing. Ph.D.	<i>Advances in Management and Applied Economics</i> , 1792-7544; <i>Calitate – Mediu Quality Environment</i> , 2066-993; <i>Human Resources Management and Ergonomics</i> , 1337-0871; <i>E+M Ekonomika a Management</i> , 2336-5064; <i>SciPap</i> , 1804-8048
Michaela Kotková Stříteská, doc. Ing. Ph.D.	<i>Socialiniai tyrimai / Social Research</i> , 1392-3110; <i>SciPap</i> , 1804-8048
Michal Kuběnka, Ing. Ph.D.	<i>Problems of Management in the 21st Century</i> , 2029-6932; <i>Slovak Scientific Journal: Management – Science and Education</i> , 1338-977
Romana Provazníková, doc. Ing. Ph.D.	<i>Regional Formation and Development Studies</i> , 2351-6542; <i>Social Research</i> , 1392-3110
Liběna Černohorská, doc. Ing. Ph.D.	<i>American Journal of Economics, Finance and Management</i> , 2836-9416

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
Jitka Komárková, prof. Ing. Ph.D.	Regional Innovation Systems – Geoinformation Sciences and Spatial Data	University of Akureyri, Faculty of Business Administration, Iceland	2019
Michaela Kotková Stříteská, doc. Ing. Ph.D.	Business, Governance and Sustainability	The First International Workshop about Business, Marketing and Sustainability, University of Lampung, Indonesia	2021
Petr Hájek, prof. Ing. Ph.D.	The Predictive Power of Investor Sentiment in the Bitcoin Market	6th International Conference on E-Business and Internet, Singapore	2022
Viktor Prokop, doc. Ing. Ph.D.	Current State of the Art and Future Trends in Sustainability Research	School of Business and Governance, Tallinn University of Technology, Tallinn, Estonia	2022
Viktor Prokop, doc. Ing. Ph.D.	Effects of Gender Diversity on Corporate Innovativeness and Social Responsibility within Central Europe	Faculty of Management, University of Primorska, Koper, Slovenia	2022
Petr Hájek, prof. Ing. Ph.D.	Recent Advances in Detecting Fake Reviews in E-Commerce Platforms	7th International Conference on E-Business and Internet, Singapore	2023
Robert Baťa, doc. Ing. Ph.D.	Sustainable Energy Sources and Their Potential	West Saxon University of Applied Sciences of Zwickau, Germany	2023
Jan Stejskal, prof. Ing. Ph.D.	Circular Economy: A Good Example of Combining Economic Theory with Practice	Ton Duc Thang University, Ho Chi Minh City, Vietnam	2023
Viktor Prokop, doc. Ing. Ph.D.	The Role and Importance of Intangible Assets: Theoretical and Empirical Analysis of Human Capital for Sustainability and Innovation	Matsumoto University, Matsumoto, Japan	2023
Jana Janderová, JUDr., Ph.D.	Good Administration and Human Rights	Libera Università Maria Ss. Assunta, Rome, Italy	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
Lisa Miller, Dr.	State of California, Administrative Judge, Arbitrator, and Trial Lawyer	US Corporate and Business Law	2019
Jens Horbach, prof. Dr.	University of Applied Sciences Augsburg, Germany	The Importance of Regional Spill-over Effects for Eco-Innovations in German Start-ups	2021
Wolfgang Gerstlberger, prof. Ph.D.	Tallinn University of Technology, Tallinn, Estonia	Exploration of the Interface of Circular Economy and Innovation Management	2021
Tarlan Ahmadov, Dr.	Tallinn University of Technology, Tallinn, Estonia	Fiscal Incentives for Circular Economy: Insights from the Baltic States	2021
Wolfgang Gerstlberger, prof. Ph.D.	Tallinn University of Technology, Tallinn, Estonia	Enabling Circular Business Models in Europe	2022
Fazal Ur Rehman, Ph.D.	University of Lakki Marwat, Pakistan	Creating Business Models for Sustainability and Circular Economy	2022
Piotr Rogala, prof.	Wroclaw University of Economics and Business	The ISO 9000 – Management Standards that Changed the World	2022
Jens Horbach, prof. Dr.	University of Applied Sciences Augsburg, Germany	Climate Change Affectedness and Innovation in German Firms	2022
Luca Brusati, prof. Ph.D.	University of Udine, Italy	The Principles of Good Governance and Regional Development	2023
Jean-Michel Sahut, prof. Ph.D.	IDRAC Business School Lyon, France	Modelling Economic Effects of Fake Travel Review Detection	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 project/programme research call	Name of the authority/guarantor contracting project/programme of the call	Year
Čapek Jan, prof. Ing. CSc.; Stanislava Šimonová, doc. Ing. Ph.D.; Petr Hájek, prof. Ing. Ph.D.; Renáta Myšková, doc. Ing. Ph.D.; Jan Stejskal, prof. Ing. Ph.D.	Evaluation of R&D&I Outcomes	Department for the Evaluation of Research Organisations, Office of the Government of the Czech Republic, Research, Development and Innovation Council	2019 – present
Viktor Prokop, doc. Ing. Ph.D.; Miloslav Hub, doc. Ing. Ph.D.; Jan Stejskal, prof. Ing. Ph.D.	Programme for Supporting Applied Social Science and Humanities Research, Experimental Development and Innovation ÉTA	Technology Agency of the Czech Republic (TAČR)	2019 – present
Jan Stejskal, prof. Ing. Ph.D.	Certified evaluator of European R&D&I projects	Ministry of Education, Youth and Sports of the Czech Republic, Ministry of the Interior of the Czech Republic	2009 – 2020
Viktor Prokop, doc. Ing. Ph.D.	External evaluator of projects under the Science and Research Support Programme in the Moravian-Silesian Region	Technology Agency of the Czech Republic (TAČR)	2018 – present
Jan Stejskal, prof. Ing. Ph.D.	Expert evaluator of projects under EU framework programmes	European Union, European Commission	2019 – present
Jan Stejskal, prof. Ing. Ph.D., Renáta Myšková, doc. Ing. Ph.D.	Member of the Standing Evaluation Committee of the Slovak Academy of Sciences for the Evaluation of VEGA Projects	Slovak Academy of Sciences	2019 – 2023
Jolana Volejníková, doc. Ing. Ph.D.	External evaluator of research projects	Josef Hlávka Economic Institute	2019-2020
Martin Maštálka, Ing. Ph.D.	Expert in the fields of: Urban Studies, Architecture and Urbanism, Public Administration and Regional Development, Spatial Planning, Public Administration and Public Policy	Slovak Research and Development Support Agency	2019 – 2023
Petr Hájek, prof. Ing. Ph.D.	Panel: HS4 (Individuals, Institutions, Markets)	National Science Centre, Poland	2022, 2024
Vladimír Žitek, doc. Ing. Ph.D.	Evaluator of NPO projects under the Call for Component 4.5 – Development of Regional Cultural and Creative Centres	Czech Republic, Ministry of Industry and Trade	2022
Viktor Prokop, doc. Ing. Ph.D.	External expert in the area of the Green Transition of the Estonian Metal Industry	Estonian Ministry of Economic Affairs	2023

Petr Hájek, prof. Ing. Ph.D.	Panel P103	Czech Science Foundation (GAČR)	2023 – present

Note: Provide up to 10 examples.

HTML links to additional documentation:

[1] <https://topresearcherslist.com/Home/Profile/792134>

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 Faculty carries out research projects across all major academic disciplines covered by its study programmes, particularly doctoral programmes. Many of the most prestigious projects employ synergistic interdisciplinary approaches, allowing for nationally and internationally significant research outcomes that advance knowledge within their respective disciplines. In the post-COVID period, the Faculty has increasingly focused on contract research, responding to stakeholder demands, primarily at the regional level. These projects engage a wide spectrum of academic staff, strengthening the Faculty's research capabilities.

Overview of Key Research Projects and Their Outcomes

GAČR Project: Modelling Emotions in Verbal and Non-Verbal Managerial Communication for Corporate Financial Risk Prediction (2019–2022)

This is a **highly topical issue** of strong interest to the **scientific community**, as reflected in **collaborations with leading international research institutions, high-quality published outputs, and a strong citation impact**. This is a highly topical issue of strong interest to the scientific community, as reflected in collaborations with leading international research institutions, high-quality published outputs, and a strong citation impact. The project's practical application lies in the analysis of annual reports and other corporate communications, which provide insights into management's risk perception and decision-making processes. The findings enable more accurate corporate risk assessments and better predictions of future business performance. This **interdisciplinary project** combines **economic and managerial perspectives** with **advanced informatics methodologies**, aligning with the Faculty's **mission and vision**.

GAČR Project: Aspect-Based Sentiment Analysis of Financial Texts for Corporate Performance Prediction (2022–2024)

This **follow-up project** expands on the previous research, further advancing **interdisciplinary corporate performance evaluation** through **cross-disciplinary research teams**. The project focuses on aspect-based sentiment analysis of financial texts, enabling a more detailed and targeted analysis of business-related information. This approach allows for in-depth examination of financial commentaries, capturing not only economic performance indicators but also social, legal,

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.

technological, and environmental aspects influencing corporate reputation.

The **key contributions** of this project include:

- **Scientific Impact:** The project pushes the boundaries of sentiment analysis by introducing a more granular approach (aspect-based analysis).
- **Practical Applications:** The project enhances the accuracy of financial performance predictions, including key metrics such as return on investment (ROI), stock volatility, and the likelihood of financial fraud.
- **Societal Impact:** The research contributes to greater transparency in financial decision-making, fostering corporate credibility and financial market stability.

Both projects **support the Faculty's mission and strategy** in several key areas:

- a) They integrate expertise from finance, data science, and natural language processing, promoting interdisciplinary collaboration.
- b) The results have direct practical applications in corporate management and decision-making processes.
- c) The projects involve close collaboration with prestigious international research institutions, enhancing the Faculty's global reputation.
- d) Students from the Data Science for Business study programme actively participate, helping them develop professional skills and strengthen links between education and practice.

Selected Key Research Outputs

- **Hajek, P., Hikkerova, L., & Sahut, J. M. (2023).** How well do investor sentiment and ensemble learning predict Bitcoin prices? *Research in International Business and Finance*, 64, 101836. **IF: 6.3**
- **Hajek, P., Hikkerova, L., & Sahut, J. M. (2023).** Fake review detection in e-commerce platforms using aspect-based sentiment analysis. *Journal of Business Research*, 167, 114143. **IF: 10.5**
- **Bouteska, A., Hajek, P., Abedin, M. Z., & Dong, Y. (2022).** Effect of Twitter investor engagement on cryptocurrencies during the COVID-19 pandemic. *Research in International Business and Finance*, 64, 101850. **IF: 6.5**
- **Hajek, P., & Munk, M. (2023).** Speech emotion recognition and text sentiment analysis for financial distress prediction. *Neural Computing and Applications*, 35(29), 21463-21477. **IF: 4.5**

Ministry of Culture Project: Mapping Cultural and Creative Industries in the Pardubice Region (2023–2025)

This project, funded by the Ministry of Culture of the Czech Republic through regional allocations, aims to:

- Conduct an **economic and social analysis**, mapping the status and potential of cultural and creative industries (CCI) in the Pardubice Region.
- Identify **priority areas for support**, develop a strategy for CCI development at the local and regional levels, and contribute to the Strategy for the Development and Support of Cultural and Creative Industries in the Pardubice Region.
- Develop **analytical tools for CCI growth**, including an Action Plan for the upcoming period.

This project is a prime example of FEA's collaboration with regional public administration and NGOs, resulting in a strategy that will shape the development of the region in the coming years. The Dean of the Faculty is a member of the steering committee responsible for drafting the strategy, and it is expected that Faculty staff will continue to serve as experts in socio-economic evaluation and

strategy assessment under a service contract.

The project aligns with FEA's strategic vision of being a key player in regional development, applied research, and interdisciplinary collaboration. The mapping of CCIs provides data and analytical outputs that will help the Pardubice Region identify priority areas for cultural and creative sector growth. This initiative demonstrates the Faculty's ability to respond to public administration and regional stakeholders' needs and offer practical solutions.

The project outputs include analytical research reports, final reports, and a strategy document, which will be completed in 2024. The Pardubice Regional Council is expected to approve the strategy in spring 2025.

Ministry of Industry and Trade Project: Development of a Smart Health Protection Platform and Analysis of Its Economic Impact on the Public and Private Sectors (2021–2023)

This project, funded by the Ministry of Industry and Trade (MIT) under the Operational Programme Enterprise and Innovation for Competitiveness (OPPIK), was carried out in collaboration with Principal Engineering s.r.o., FEA, and the Faculty of Health Studies of the University of Pardubice (FHS UPCE). The project aimed to develop and validate a digital system (software application) incorporating artificial intelligence, telemedicine, and multiple data platforms to establish multi-layered protection for individuals, groups, and communities against viral respiratory infections.

The research component of the project focused on:

1. Continuous validation of the software in close collaboration with the development team.
2. Assessing and verifying the economic and social impacts of the proposed solution in corporate practice.

Two **economic models** were created:

- A **predictive economic model** for individuals and organisations.
- A **preventive model** for respiratory disease management.

Based on the analysis, the project identified the need for an **advanced extension of the models**, leading to the development of a **respiratory disease management system** based on the **PDCA (Plan-Do-Check-Act) methodology**.

The project's main output is the **AI-based web application "VANDA"**, which is jointly owned by Principal Engineering s.r.o. and the University of Pardubice.

This project strongly supports FEA's mission and strategy by fostering collaboration with industry, promoting interdisciplinarity, and delivering valuable research-based solutions for corporate practice. Following its success, a joint project was submitted with Principal Engineering to continue developing further extensions of this healthcare platform.

GAČR Project: Modelling the Dynamics of Determinants of National and Regional Productivity Based on Knowledge and Cooperation Effects (2017–2019)

This project, conducted by FEA, builds upon a previous GAČR-funded project carried out by the same research team at the Faculty. The project aimed to identify key determinants influencing national and regional productivity, using insights from knowledge production functions. The analysed determinants were selected based on their exogenous (e.g. technological and knowledge acquisition, knowledge spillover effects) and endogenous (e.g. R&D expenditures, skilled workforce, innovation-friendly environment, corporate strategy) characteristics. The research team also tackled the complex issue of the dynamic evolution of these determinants and their impact by developing dynamic models for both national and regional levels. The project included cross-sectoral and international analyses of knowledge and cooperation effects, leading to valuable

implications for policy and practice.

This research had a strong interdisciplinary character, involving experts from multiple Faculty institutes. The project aligned with the Faculty's strategic educational priorities, advancing knowledge in regional economics and providing practical implications consistent with the Faculty's mission and strategy.

Selected Research Outputs

- **Prokop, V., & Stejskal, J. (2019).** Different influence of cooperation and public funding on innovation activities within German industries. *Journal of Business Economics and Management*, 20(2), 384-397. IF: 1.64
- **Hájek, P., Stejskal, J., Kotková Střiteská, M., & Prokop, V. (2020).** Modelling innovation paths of European firms using fuzzy Balanced Scorecard. *Reliability and Statistical Computing: Modeling, Methods and Application* (pp. 35-46). Springer Publishing.
- **Odei, S. A., & Stejskal, J. (2020).** Firms' pursuit of innovations through internationalization: A treatment effect estimation. *Technological and Economic Development of Economy*, 26(4), 837-866. IF: 3.97

GAČR Project: Design of a Dynamic Knowledge-Based Business Model Rooted in Open Innovation Principles (2020–2023)

This project **continued the previous GAČR-funded research**, with **FEA as the lead institution**. This time, collaboration was **expanded to include the Faculty of Economics and Administration at Masaryk University in Brno**, strengthening research partnerships. The project focused on businesses and their roles in innovation networks at various levels. A key research area was open innovation-based business models, which enterprises adopt to enhance their competitiveness.

The project's goal was to **develop novel business models** that facilitate the **implementation of open innovation strategies** into corporate frameworks. The research team addressed a **critical research gap**, as **few existing studies** systematically examine **business model innovation** in the context of:

1. **Recent open innovation developments**, and
2. **The dynamic interactions of business model elements.**

A **unique feature** of the proposed models was the integration of a **knowledge base as a central component**.

The project and its outcomes were highly interdisciplinary, strengthening cooperation with a renowned Czech research institution and fostering international collaborations within knowledge networks. This approach aligns with the Faculty's strategic development goals.

Selected Research Outputs

- **Prokop, V., Hajek, P., & Stejskal, J. (2021).** Configuration paths to efficient national innovation ecosystems. *Technological Forecasting and Social Change*, 168, 120787. IF: 10.884
- **Hojnik, J., Prokop, V., & Stejskal, J. (2022).** R&D as a bridge to sustainable development? Case of Czech Republic and Slovenia. *Corporate Social Responsibility and Environmental Management*, 29(1), 146-160. IF: 9.8
- **Prokop, V., Stejskal, J., Klimova, V., & Zitek, V. (2021).** The role of foreign technologies and R&D in innovation processes within catching-up CEE countries. *PLOS ONE*, 16(4), e0250307. IF: 3.752

GAČR Project: Structural Barriers and Opportunities for Cooperation and Integration of Post-Communist EU Countries in European Defence Collaboration (2022–2024)

This project, led by the **Faculty of Social Studies at Masaryk University (FSS MUNI)**, with **FEA** as a **co-investigator**, examined **challenges faced by post-communist EU member states** in the context of **defence cooperation and integration**. The **significant lag** of post-communist EU countries (**EUPCC**) in **defence collaboration** is a well-known issue. The project aimed to identify common structural barriers that hinder defence cooperation among EUPCC nations and to test a combination of three theoretical explanations based on:

1. **Historically embedded interest group structures,**
2. **Organisational culture,** and
3. **Rational decision-making in security and defence policy.**

The findings from this fundamental research project make a valuable contribution to the study of regional barriers to defence and security cooperation across multiple platforms, including the EU, NATO, minilateral, and bilateral frameworks. Additionally, the research helps identify pathways to more effective collaboration.

Selected Research Outputs

- **Pernica, B., Palavenis, D., & Dvorak, J. (2024).** Small arms procurement and corruption in small NATO countries. *Journal of Public Procurement*, 24(3), 348-370. **IF: 1.8**
- **Pernica, B., Fuka, J., Baťa, R., & Zdražil, P. (2024).** Nervi rei publicae: local governments as economic populists? *Policy Studies*, 1-24 (ahead-of-print). **IF: 2.4**
- **Pernica, B., Dvorak, J., Lazar, Z., Taksás, B., & Maskalík, A. (2023).** Defense industrial bases (DIB) in six small NATO post-communist countries. *Economics of Peace and Security Journal*, 18(1). **IF: 1.1**

TACR Project: Establishing New Educational and Training Priorities to Address Changing Labour Market Needs in the Transport, Postal, and ICT Sectors (2019–2021)

This project was led by the **Faculty of Transport Engineering (DFJP UPCE)** and involved **young promising researchers from FEA**. The project was conducted in collaboration with **Česká pošta, s.p.**, with the aim of redefining educational and training priorities in selected secondary schools to better reflect evolving labour market demands in the transport, postal, and information and communication technology (ICT) sectors.

Project Outputs

- A plan for professional internships and placements aligned with the needs of all consortium members.
- A revision of the curriculum content of selected specialised subjects in secondary schools affiliated with the Association, along with an implementation plan for proposed changes in teaching key vocational subjects.
- **A software tool** developed as a **teaching aid** for vocational education in secondary schools within the Association. The software consists of four modules:
 1. **E-commerce in distribution logistics**
 2. **Reverse logistics**
 3. **City logistics**
 4. **Green logistics**

This research project provided a platform for synergistic collaboration between researchers from various disciplines and maintained a strong interdisciplinary focus. The project's outcomes are actively utilised by industry partners, and its scope included sustainability and digitalisation

challenges.

Joint Research Project: Measuring the Value of Library Services

This joint research project is conducted **in collaboration with the Municipal Library of Prague** under a **cooperation agreement**. The project is **funded through the VISK1 grant programme** of the **Ministry of Culture of the Czech Republic**, and direct financial participation from FEA is excluded under the grant conditions. As a result, all costs are covered by the Municipal Library of Prague.

The research, conducted **annually since 2011**, aims to:

- Develop a **unique methodology** for determining the **societal value** of consumers of **cultural and information services** (public services).
- Create a **managerial tool** that allows for **efficiency assessment** of **individual services provided by public libraries**.

This represents a complex research challenge, as no similar tool for calculating the efficiency of specific library services currently exists either in the Czech Republic or globally.

Project Outputs

The developed methodology has been tested on dozens of public libraries across the Czech Republic. Educational seminars for economists and public library directors have been organised to enable them to effectively use the methodology. The project has also led to the publication of **numerous high-impact research articles in renowned international journals**, including:

- **Hájek, P., & Stejskal, J. (2015)**. Modelling public library value using the contingent valuation method: The case of the Municipal Library of Prague. *Journal of Librarianship and Information Science*, 47(1), 43-55. **IF: 1.239**
- **Stejskal, J., & Hájek, P. (2015)**. Evaluating the economic value of a public service – the case of the Municipal Library of Prague. *Public Money & Management*, 35(2), 145-152. **IF: 0.718**
- **Stejskal, J., Hájek, P., & Řehák, T. (2019)**. The economic value of library services for children: The case of the Czech public libraries. *Library & Information Science Research*, 41(3), 100963. **IF: 1.485**
- **Stejskal, J., Hajek, P., & Cerny, P. (2021)**. A novel methodology for surveying children for designing library services: A case study of the Municipal Library of Prague. *Journal of Librarianship and Information Science*, 53(2), 307-320. **IF: 1.82**

This long-term research collaboration and its outcomes demonstrate the ability of FEA researchers to address critical economic research challenges within both national and international networks. The findings are entirely unique, have proven successful in a highly competitive international research environment, and provide opportunities for the development of young researchers. The project's **focus is fully aligned** with the **mission and strategy of FEA**.

International Research Projects: EU COST, EEA, and Other Initiatives

FEA is actively involved in international research projects, including those funded by EU COST, the European Economic Area (EEA), and other international grants. In 2023, the Faculty participated in the international contract research project *Green Transition of the Metal Industry*, funded by the Ministry of Foreign Affairs of Estonia. The Faculty's partner institution was Tallinn University of Technology (Estonia). Associate Professor Viktor Prokop (FEA) was invited as an international expert to assess the entire transformation plan.

For the period **2023–2027**, FEA is engaged in the **EU COST-funded project** *Cooperation, Development, and Cross-Border Transfer of Industrial Symbiosis among Industry and Stakeholders (LIAISE)*. In this project:

- **Associate Professor Viktor Prokop (FEA)** is a **member of the Management Committee**.
- **Ph.D. students and other FEA researchers** are involved in various **sub-projects**.

The project aims to connect public, private, and non-profit sectors to foster industrial symbiosis and promote circular economy principles.

Between 2022 and 2024, FEA researchers contributed to the bilateral research project *Towards Regenerative and Sustainable Development and Society*, funded under the Bilateral Initiative Programme from the EEA and Norway Grants (2014–2021). The project was led by Professor Lenka Tetřevová from the Faculty of Chemical Technology (FChT UPCE), with FEA researchers as part of the research team. The goal was to establish a network of experts for experience-sharing and research on sustainable and regenerative business development.

Due to the nature of project funding, FEA participates in these initiatives without direct financial contributions.

Selected Research Outputs from These Projects

- **Tetřevová, L., Evans, R. et al. (2024).** *Towards Sustainable and Regenerative Development and Society: Corporate Social Responsibility as a Potential Pathway*. Pardubice: UPCE.
- **Kuba, O., Hudec, O., & Stejskal, J. (2023).** Economic discontent and anti-system political parties in the Czech Republic. *Problems of Post-Communism*, 70(6), 606-617. **IF: 1.9**
- **Kuba, O., & Stejskal, J. (2024).** E-voting as a tool to reduce unequal voter turnout in the Czech Republic. *Journal of Comparative Politics*, 17(1), 19-31. **IF: 1.1**
- **Karman, A., Prokop, V., & de Sousa Jabbour, A. B. L. (2024).** Circular economy practices as a shield for long-term organisational and network resilience during crises: Insights from industrial symbiosis. *Journal of Cleaner Production*, 142822. **IF: 9.8**

Table 3.3.1 Projects supported by public funds^[4, 5, 6]

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
GAČR	Modelling the Dynamics of Determinants of National and Regional Productivity Based on Knowledge and Cooperation Effects ^[1]	920/36				
TAČR	Establishing New Educational and Training Priorities to Address Changing Labour Market Needs in the Transport, Postal, and ICT Sectors (in cooperation with Faculty of Transport Engineering, UPCE)	240/9	281/11	414/16		
GAČR	Modelling Emotions in Verbal and Non-Verbal Managerial Communication for Corporate Financial Risk Prediction ^[2]	781/31	821/32	624/25	126/5	
GAČR	Design of a Dynamic Knowledge-Based Business Model Rooted in Open Innovation Principles		1468/58	1573/62	1717/68	154/6
TAČR	Application Software for Decision Support Based on an Agent-Based Approach (Proof-of-Concept Project)			165/7		
GAČR	Aspect-Based Sentiment Analysis of Financial Texts for Predicting Corporate Financial Performance ^[3]				1037/41	1058/42
Total		1941/76	1941/76	2570/101	2776/110	2880/114
In the role of another participant						
Provider ²⁷	Project name	Support (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
TAČR	Intelligent Auto-Diagnostics (as part of collaboration with the Faculty of Transport Engineering, UPCE)			414/16		
Ministry of Industry and Trade (MPO)	Development of a Smart Health Protection Platform and Analysis of Its Economic Impact on the Public and Private Sectors			961/38	2945/116	1583/62
GAČR	Structural Barriers and Opportunities for Cooperation and Integration of Post-Communist EU Countries in European Defence Cooperation				214/8	214/8
Total				1375/54	3159/124	1797/70

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
Statutory City of Pardubice	Analysis of the Housing Market and Its Affordability in the Statutory City of Pardubice and Its Surroundings	323/13				
Czech Republic, Ministry of Regional Development(MMR)	Process Evaluation of the Implementation of Integrated Urban Tools for the Ministry of Regional Development	485/19				
RETIA, a.s.	Analysis of Territorial Potential for the Deployment of a Comprehensive Anti-Drone System		72/3	128/5		
Českomoravská záruční a rozvojová banka (now National Development Bank)	Model of the Banking Multiplier for ČMZRB Products and Analysis of Commercial Banks' Offerings for Municipalities			50/2		
Brno University of Technology (VUT Brno)	Methodology for Assessing the Societal Impact of Construction Interventions and Transport Restrictions			200/8		
Regional Development Agency of the Pardubice Region (RRA PK)	Analysis of the Housing Market and Residents' Needs in Economically Disadvantaged Microregions of Česká Třebová and Moravská Třebová				21/1	139/5
Statutory City of Pardubice	Economic and Process Analysis of the Statutory City of Pardubice (Background Study for the City Council's Strategic Decision on Maintaining or Abolishing City Districts)					165/7
Vysočina Region	Expert Economic and Social Analysis for the Development of a Regional Strategy for Roma Integration and Support for Sustainable Governance of Social Inclusion Policies in the Vysočina Region					130/5
Pardubice Region	Mapping of Cultural and Creative Industries (CCI) in the Pardubice Region – Economic and Social Analysis, Mapping, and Strategy Proposal for the Support of Cultural and Creative Organisations in the Pardubice Region					373/15
Total		808/32	72/3	378/15	21/1	807/32

HTML links to additional documentation:

- [1] <https://starfos.tacr.cz/cs/projekty/GA17-11795S>
- [2] <https://starfos.tacr.cz/projekty/GA19-15498S?query=sa3iaadcylfhq#project-main>
- [3] <https://starfos.tacr.cz/projekty/GA22-22586S>
- [4] <https://starfos.tacr.cz/projekty/GA20-03037S?query=3p4aaac6pbja>
- [5] <https://starfos.tacr.cz/projekty/TJ02000093#project-main>
- [6] <https://starfos.tacr.cz/projekty/GA22-25205S#project-main>

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:

Development of a Platform for Smart Health Protection and Research on Its Economic Impact on the Private and Public Sectors

The objective of this project was to develop the **VANDA digital platform**, which utilises **artificial intelligence (AI)** to prevent and manage **respiratory diseases** in organisations and among individuals. The research involved **the creation and validation of predictive economic models** aimed at optimising costs associated with **prevention and treatment**.

The project has delivered concrete benefits in **public health, economic efficiency, and quality of life**:

- **Improvement of Public Health:** The platform enables early detection and prevention of the spread of respiratory diseases, protecting the health of employees, families, and broader communities.
- **Economic Savings:** By optimising prevention processes and reducing absenteeism, the project directly contributes to lower healthcare and operational costs for organisations.
- **Support for Digital Transformation:** The integration of AI and telemedicine enhances accessibility to healthcare services and fosters the digitalisation of the healthcare sector.
- **Social Sustainability:** The solution supports long-term improvements in working conditions, employee protection, and the sustainability of public healthcare.

The software application exists and is continuously being further developed through ongoing collaboration between FEA and Principal Engineering. However, due to restricted intellectual property rights, the International Evaluation Panel (IEP) cannot be granted open access to the application.

The research reflects the **key priorities of the Faculty**:

- **Scientific Excellence and Societal Relevance:** The project provides innovative solutions to public health challenges and contributes to digitalisation efforts.
- **Interdisciplinarity and Collaboration:** The research involved joint efforts between FEA and the Faculty of Health Studies (FHS), combining expertise in economics, public health, and IT.
- **Practical Applicability:** The project outputs can be utilised across various industries. If employees are willing to use smart devices for monitoring vital signs, employers can prevent the spread of infectious diseases in workplaces.

The project **does not include a dedicated gender analysis**; however, the platform may contribute to workplace gender equality by mitigating the impact of illness on employees, particularly women,

²⁹ See Terms definition.

who are traditionally more affected by caregiving responsibilities for children or elderly family members. Additionally, the project has a **positive environmental impact** by supporting the advancement of telemedicine.

Process Evaluation of the Implementation of Integrated Urban Tools for the Ministry of Regional Development (MMR) – Evaluation Report

The objective of this project was to assess key processes involved in the implementation of integrated urban tools at the Ministry of Regional Development of the Czech Republic (MMR) and to propose process optimisation measures. The primary aim was to eliminate inefficiencies that cause delays, errors, or failure to meet client expectations, with a particular focus on cases where clients require corrective action for substandard or unmet services.

The research included:

- **A theoretical and methodological framework**, situating the issue of implementation within both national and European contexts.
- **A research methodology section**, detailing the methods used, research procedures, timeline, and the number of respondents.
- **Process analysis**, addressing evaluation questions, management recommendations, and process visualisation through mapping techniques.
- **A managerial summary**, available in both Czech and English.
- **A technical appendix**, containing detailed documentation.

The findings of the research were implemented by MMR within its internal management processes, resulting in increased process efficiency and improved service quality within the governing bodies under MMR's jurisdiction. The research also enhanced transparency and management efficiency at both national and regional levels, contributing to the modernisation of public administration.

This project aligns with FEA's priority of research activities with applied outputs that address societal needs. By focusing on improving public sector efficiency and solving pressing administrative challenges, the project supports sustainable development and contributes to the long-term enhancement of public resource management.

Methodology for Assessing the Societal Impact of Construction Interventions and Transport Restrictions

This contract research project (2021–2022) was conducted **in collaboration with the Faculty of Civil Engineering at Brno University of Technology (BUT)**. The BUT team focused on a project concerning the reconstruction and complete redevelopment of prestressed prefabricated bridge structures built between 1960 and 1990. The role of the FEA research team was to develop a new methodology to help BUT researchers calculate societal costs (losses) associated with various traffic restrictions during bridge reconstruction or full redevelopment.

The methodology included **specific methodological procedures** for:

- Expressing or calculating **implicit and explicit costs**.
- Evaluating **societal benefits (or loss of benefits)** arising from various restrictions, which **directly impact citizens' daily lives**.

The research team, including students from the master's programme in Public Sector Economics, recommended an optimal approach and conducted calculations for specific construction sites in the municipality of Drnholec.

Project Alignment with FEA Priorities

- **Support for Applied Research with Practical Impact:** The project analyses the costs and benefits of public infrastructure reconstruction, contributing to methodologies for effective

public resource allocation. The outputs have significant practical relevance, particularly in regional planning and public resource management.

- **Scientific Excellence and Transferability of Results:** The methodology developed for calculating societal costs and benefits is unique in the Czech Republic. It has the potential to be applied across other areas of the public sector and economic decision-making. This positions the Faculty as a centre of excellence in public investment evaluation.

Sustainable Development and Social Responsibility

- The project supports sustainable development by ensuring **efficient use of public funds and minimising infrastructure project costs**, in line with the Faculty's vision of promoting projects with positive societal and environmental impact.
- The case study of the bridge in Drnholec enhances understanding of **regional needs** and enables **more effective infrastructure investment planning**. The Faculty thereby strengthens its role as a key partner for regional governments and institutions.

Analysis of Territorial Potential for the Deployment of a Comprehensive Anti-Drone System

The company **RETIA, a.s.** was the lead institution for the project **ECG 19_262/00201 62**, titled *Research and Development of a Comprehensive Anti-Drone System*, funded under the **Entrepreneurship and Innovation for Competitiveness Programme (2014–2020)**.

The project primarily focused on:

- The research and development of a comprehensive anti-drone system capable of **detecting aerial threats** through various reconnaissance elements.
- The processing of airspace data to determine **optimal countermeasure responses** against identified threats using specialised applications to classify priority targets based on their level of threat to protected sites.

In the second phase of the project, FEA researchers were invited to participate in a contract research assignment titled *Analysis of Territorial Potential for the Deployment of a Comprehensive Anti-Drone System*. The objective was to provide RETIA, a.s. with:

- A demand potential assessment for the system (KAS – Comprehensive Anti-Drone System), categorised into "hard" and "soft" targets.
- Analytical insights into the public administration framework in the Czech Republic, including its legal environment and institutional complexity, to facilitate the interpretation of analytical outputs.

Project Outputs

- **Analysis of target types ("hard" and "soft" targets)** – A research report containing an analysis of target types and a methodology for estimating the expected demand for anti-drone measures based on the spatial concentration of critical elements.
- **Methodology for estimating the expected demand for anti-drone measures** in relation to territorial element concentration.

Project Alignment with FEA Priorities

- **Applied Research:** The project aligns with the Faculty's focus on applied research with direct practical implications, particularly in public administration and security.
- **Interdisciplinarity:** The collaboration with a technology firm enabled the integration of economic, administrative, and technical disciplines, fostering a comprehensive approach to contemporary challenges.

- **Regional Development:** Participation in the project strengthens ties between the University and regional businesses, contributing to the socio-economic development of the Pardubice Region.

Economic Expertise, Socio-Economic Analyses, and Strategic Inputs for Decision-Making by Public Authorities

This section presents a **set of research outputs** resulting from **contract research projects conducted by FEA experts** in collaboration with **regional authorities** or commissioned by **municipal and regional councils**. FEA has established long-term cooperation with the Regional Authority of the Pardubice Region, the City Council of Pardubice, as well as in other regions, including the Vysočina Region and the City of Ostrava.

Examples of Specific Outputs

- **Economic Analysis of Housing Conditions and Affordability:** This analysis provided key data for the Pardubice City Council to support investment decisions on new residential developments. A similar study was conducted in the Vysočina Region, with results used as a benchmarking tool for both regions.
- **Economic and Sociological Study of the Needs of Economically Disadvantaged Regions:** This study was commissioned by the Pardubice Region to define a Strategy for Supporting Economically Disadvantaged Regions, which is currently being implemented. The Dean of FEA is a member of the steering committee overseeing its implementation.
- **Economic and Process Analysis of the Administrative Division of Pardubice into City Districts:** This study evaluated potential structural changes, including the abolition of certain city districts, to inform the municipal council's evidence-based decision-making process.

These research outputs have direct practical significance and are always developed in consultation with key stakeholders, many of whom are long-term partners. The findings support regional and municipal governments in strategy development, efficient resource allocation, and improving residents' quality of life.

Research outcomes often address the needs of specific population groups, contributing to more effective municipal policies. They also include sustainability analyses of existing housing infrastructure, with a focus on energy efficiency and the use of renewable energy sources.

Project Alignment with FEA Priorities

- **Regional Development:** The project supports FEA's mission of applied research with a direct impact on regional development and quality of life. The Faculty is establishing itself as a key partner for public administration and regional institutions.
- **Applied Research:** The project delivers practical results that are actively used in the development of public policies.
- **Interdisciplinarity:** The research combines economics, sociology, public sector economics, and regional development, in line with the Faculty's strategic focus on interdisciplinary collaboration.

Business Models for the Circular Economy: A European Perspective – A Prestigious Monograph Published by Springer

The Science and Research Centre, in collaboration with FEA PhD supervisors, whose doctoral research focuses on the circular economy (CE), has been conducting continuous research in circular and regenerative economics. The result is a monograph providing a comprehensive overview of CE-related issues and business model innovation in selected European countries where sustainability and the transition to CE have become key political and economic priorities. The FEA research team collaborated with renowned international scholars, including experts from **Slovenia** (University

of Primorska), **Austria** (New Design University), **Spain** (University of Alcalá), **Norway** (Nofima AS), **Germany** (Ruhr University Bochum), **The Netherlands** (University of Groningen), and **Denmark** (Aarhus University).

Key Contributions of the Monograph

- **Supporting Environmental Transformation:** Provides clear justification for shifting from a linear model ("extract–produce–dispose") to circular economy principles, minimising waste and optimising resource efficiency.
- **Innovation in Green Technologies:** Examines examples of green technologies and their integration into value chains, supporting sustainable production and consumption models.
- **Job Creation:** Identifies opportunities in repair, recycling, and new business models, which can generate both local and international job opportunities.
- **Social Inclusion:** Promotes equal access to sustainable technologies and highlights the importance of collaboration across societal groups and sectors.
- **Policy Development:** Provides data-driven recommendations for European policymakers, including insights relevant to the EU Circular Economy Strategy.
- **Education and Research:** Establishes a foundation for future academic research and education in sustainable development.

Alignment with FEA Priorities

- **Interdisciplinary Research Support:** The book integrates economic, environmental, and technological approaches, reflecting FEA's commitment to interdisciplinary solutions for complex challenges.
- **Practical Applicability of Research Outputs:** The proposed models and case studies are directly applicable in business practice and regional planning.
- **Social Responsibility and Sustainable Development:** The research aligns with global sustainability goals and regenerative economic principles, emphasising the responsibility of economic actors toward future generations.
- **International Collaboration:** The monograph is a result of extensive cooperation within a diverse, interdisciplinary international research team.

Research on Fake Review Detection in e-Commerce Platforms Using Aspect-Based Sentiment Analysis – High-Impact Journal Publication (AIS)

This article is an **output of the project** *Aspect-Based Sentiment Analysis of Financial Texts for Predicting Corporate Financial Performance*. The study presents a **unique model for detecting fake reviews** based on **aspect-based sentiment analysis (ABSA)**, contributing to **greater trust in online reviews**. Since fake reviews influence consumer decisions and distort fair competition between businesses, this research plays a key role in preserving the integrity of the digital marketplace. E-commerce platforms such as Amazon can deploy ABSA models for the automated detection of fake reviews, enhancing their reputation among customers who increasingly demand transparency and fairness. Eliminating fake reviews **strengthens the position of ethically operating companies**, allowing them to **compete based on real quality** rather than **artificially generated positive ratings**.

Although the article does not primarily focus on gender issues, it has **indirect benefits for gender equality**. Removing fake reviews enhances consumer trust in genuine product and service quality, potentially benefiting businesses committed to ethical and sustainable practices – fields where women often play a significant role.

Greater transparency in online product reviews also has **environmental implications**, as it can reduce unnecessary purchases and returns, leading to lower logistics costs and carbon emissions.

Alignment with FEA Priorities

- **Scientific Excellence:** The research expands knowledge in data science and digital market economics, reinforcing FEA's position as a centre of scientific excellence.
- **Applied Research:** The ABSA model has direct practical applications for e-commerce platforms, aligning with the Faculty's strategy to conduct research with real-world impact.
- **Interdisciplinarity:** The study integrates approaches from economics, technology, and natural language processing (NLP), promoting interdisciplinary collaboration.
- **Sustainable Development:** Transparency in reviews supports responsible consumer behaviour, aligning with the Faculty's long-term sustainability goals.

Research on Forecasting Performance of Regional Innovation Systems Using Semantic-Based Genetic Programming with Local Search Optimizer – High-Impact Journal Publication (AIS)

This article is an **output of the project** *Modelling the Dynamics of National and Regional Productivity Determinants Based on Knowledge and Cooperation Effects*. The study presents a **novel model for predicting regional innovation performance** using **genetic programming**. The research introduces the use of genetic programming with local search optimisation (GSGP-LS), which improves prediction accuracy and reduces the risk of overfitting. The model outperforms traditional statistical and machine learning methods in capturing complex and nonlinear innovation system dynamics.

The model enables policymakers to make accurate predictions of regional innovation performance based on indicators such as **patents, technological and non-technological innovations, and economic returns from new products**. These insights allow better targeting of public interventions, such as funding for research and development (R&D), and support for education programmes. By running simulations, regional decision-makers can test various strategies before implementation, minimising the risk of inefficient investments.

The model can also be applied to support the development of environmentally friendly technologies and circular economy initiatives at the regional level. Improved predictions of innovation performance will enhance the efficient use of both public and private resources for sustainable development projects.

Alignment with FEA Priorities

- **Interdisciplinarity:** The study integrates economics, data science, and regional planning, reinforcing the Faculty's interdisciplinary research focus.
- **Applied Research:** The findings have direct practical implications, particularly in regional development and innovation policy, aligning with the Faculty's strategic emphasis on research with tangible applications.
- **Support for Sustainable Development:** The ability to predict innovation performance contributes to sustainable regional growth, fulfilling the Faculty's commitment to social responsibility.

Research on Configuration Paths to Efficient National Innovation Ecosystems – High-Impact Journal Publication (AIS)

This article is an **output of the project** *Design of a Dynamic Knowledge-Based Business Model Founded on Open Innovation Principles*. The study highlights the **importance of open innovation**, which connects **businesses, universities, government institutions, and civil society** within the **Quadruple Helix framework**. Such collaboration facilitates **more effective knowledge and technology sharing**, fostering **social inclusion** and enhancing **the innovation capacities of regions and nations**. Open innovation also enables rapid adaptation to environmental changes, such as technological advancements or societal challenges, thereby strengthening national economic

resilience. The article provides a roadmap for policymakers to identify effective strategies for fostering innovation, including investment in ICT, education, and a balanced mix of public and private funding sources.

Open innovation promotes the inclusion of diverse societal groups, including women, potentially increasing their engagement in innovation processes. Gender-diverse teams within innovation ecosystems contribute to a broader range of perspectives, fostering creativity in product and service development.

The study also emphasises the need to integrate environmental factors into innovation processes, leading to the development of green technologies and circular economy initiatives. Open innovation supports efficient resource utilisation through technology and knowledge sharing, promoting sustainable development and reducing environmental impact.

Alignment with FEA Priorities

- **Interdisciplinarity:** The research integrates economics, public sector economics, IT, and sociology, aligning with the Faculty's strategy of supporting interdisciplinary approaches.
- **Support for Applied Research:** The study's findings have practical implications and can be implemented across various regions, reflecting FEA's commitment to applied research.
- **International Collaboration:** The study focuses on OECD countries and provides best-practice examples, supporting the Faculty's globalisation of research activities.
- **Sustainable Development:** The research contributes to environmentally responsible innovation and social inclusion, directly aligning with the Faculty's commitment to social responsibility.

Research on Fraud Detection in Mobile Payment Systems Using an XGBoost-Based Framework – High-Impact Journal Publication (AIS)

This article is an **output of the project** *Modelling Emotions in Verbal and Nonverbal Managerial Communication for Predicting Corporate Financial Risks*. The study presents a **unique fraud detection model**, designed by the authors, that **significantly enhances detection efficiency while minimising false positive transactions**. Automating fraud detection in mobile payments strengthens consumer trust in digital financial systems, which is particularly crucial in emerging economies, where mobile payment infrastructure is a key driver of financial inclusion. The model was validated on a large dataset of mobile transactions (over 6 million records), demonstrating its scalability and real-world applicability.

Effective fraud detection reduces the socio-environmental impacts of organised crime, such as money laundering and the financing of illegal activities. Strengthening trust in digital transactions minimises the need for physical banking services, thereby reducing the carbon footprint associated with traditional financial institutions.

Automated fraud detection eliminates the possibility of gender-based discrimination, ensuring equal opportunities in financial transactions. Moreover, secure mobile payment systems enhance financial inclusion, particularly benefiting women in developing countries, who often face limited access to banking services.

Alignment with FEA Priorities

- **Scientific Excellence and Interdisciplinarity:** The research combines finance, technology, and data science, strengthening the Faculty's interdisciplinary research profile.
- **Applied Research:** The fraud detection framework has direct real-world applications, reinforcing FEA's strategy of conducting research with tangible societal impact.
- **Support for Innovation and Digitalisation:** The study aligns with global trends in digitalisation and cybersecurity, supporting the Faculty's long-term goals of sustainable development and innovation.

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

Type of result ³⁰	Year of application	Name
Jim	2019	HAJEK, Petr, et al. Forecasting performance of regional innovation systems using semantic-based genetic programming with local search optimizer. <i>Computers & Operations Research</i> , 2019, 106: 179-190. IF: 3.424
Methodology	2019	Methodology for Calculating the Efficiency of Selected Public Services
Research Report	2020	Research Report on the Project <i>Process Evaluation of the Implementation of Integrated Urban Tools for the Ministry of Regional Development</i>
Research Report	2021	Research Report on the Project <i>Analysis of the Potential of Areas for the Deployment of a Comprehensive Anti-Drone System</i>
Methodology	2021	Methodology for Assessing the Societal Impact of Construction Interventions and Transport Restrictions
Jim	2021	PROKOP, Viktor; HAJEK, Petr; STEJSKAL, Jan. Configuration paths to efficient national innovation ecosystems. <i>Technological Forecasting and Social Change</i> , 2021, 168: 120787. IF: 10.884
Monography	2022	PROKOP, Viktor, et al. <i>Business Models for the Circular Economy. Sustainability and Innovation</i> . Switzerland: Springer Nature, 2022, 269.
Jim	2023	HAJEK, Petr; ABEDIN, Mohammad Zohnul; SIVARAJAH, Uthayasankar. Fraud detection in mobile payment systems using an XGBoost-based framework. <i>Information Systems Frontiers</i> , 2023, 25.5: 1985-2003. IF: 6.9
Jim	2023	HAJEK, Petr; HIKKEROVA, Lubica; SAHUT, Jean-Michel. Fake review detection in e-Commerce platforms using aspect-based sentiment analysis. <i>Journal of Business Research</i> , 2023, 167: 114143. IF: 10.5
Software	2023	Intelligent Digital Platform for Protecting Employees in Companies and Organisations from Infectious Respiratory Diseases

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 University of Pardubice (UPCE) has established internal regulations for the commercialisation of research and creative activities. The FEA's internal guidelines (directives) further define the process of applying and transferring research results into practice, considering the Faculty's economic and IT focus. FEA's strategy does not prioritise research and development (R&D) outputs as a source of additional revenue. While their generation is not excluded, they are not considered a primary goal.

In the economic domain, the financing of R&D results itself serves as a form of commercialisation. A typical example is contract research, where stakeholders from industry either take advantage of FEA's expertise or directly commission research (e.g., analyses, expert opinions). In such cases, the stakeholder funds the research activities and subsequently utilises the results free of charge, making this an efficient way of securing additional funding for the Faculty.

Given the Faculty's strategic orientation toward **economics, public administration, and IT**, and its **regional position**, the **typical end users** of FEA's research outputs include:

1. **Government authorities** (contractual cooperation, provision of R&D activities)
2. **Regions and municipalities** (contractual cooperation, participation in R&D project proposals, serving as application guarantors and end-users of research results)
3. **Primarily small and medium-sized enterprises (SMEs)** (both domestic and international; partial contractual cooperation, partners in R&D projects)
4. **Support organisations within the regional innovation ecosystem** (e.g., Pardubice Business Incubator, the Regional Development Agency of the Pardubice Region, the Regional Chamber of Commerce, and the Smart Accelerator – contractual cooperation, continuous R&D collaboration, participation in national and international project proposals)
5. **Scientific and research institutions**, both domestic and international (standard users of research outputs in the form of final reports, research papers, and scientific articles that expand the current body of knowledge and define directions for future research).

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.

All entities in groups 1–4 are represented in the Dean's Advisory Board, where they participate in discussions on study programme development and graduate profiles, ensuring alignment with labour market needs. These organisations offer FEA students:

- **Internships and long-term placements**
- **Collaboration on bachelor's and master's theses**
- **Case studies, guest lectures, and participation in workshops and public engagement and outreach events**

FEA actively engages with stakeholders across its various activities, ensuring broad dissemination of research results. This engagement attracts new partners and enhances the Faculty's reputation as a key R&D collaborator. Various platforms are used to facilitate cooperation:

- **International networks:** FEA has established strong partnerships with renowned institutions, supporting upcoming domestic and international projects, including GAČR and EU-COST initiatives.
- **Domestic collaboration networks:** Joint project proposals are developed in partnership with universities, research institutes, businesses, and public sector entities, serving as application guarantors or research end-users.
- **Regional innovation ecosystem:** The Faculty maintains continuous cooperation with businesses, non-profit organisations, and public sector institutions, particularly within the Pardubice Region.
- **Events and conferences:** New partnerships are established at faculty-organised events (e.g., Theory and Practice Week) and through research dissemination at conferences and expert forums.

Principal Engineering

FEA has established a long-term collaboration with Principal Engineering. As part of a joint project, the company was granted exclusive rights to commercially utilise the research outcomes under a contract. In return, the University of Pardubice receives financial compensation, structured as lump-sum payments from 2023 to 2027 and profit-sharing from 2027 to 2029. Payments commenced in 2023.

Association of Exporters

FEA has been collaborating with the Association of Exporters since 2008. This partnership includes information-sharing on Czech export trends, regular participation of faculty staff and students in the Export Forum, and guest lectures by association members within the curriculum.

Czech National Bank (ČNB)

FEA's collaboration with ČNB takes the form of guest lectures by ČNB experts and opportunities for students to engage in practical projects, including work in the External Economic Relations Team (Monetary Section), regulatory compliance and reporting for credit institutions and banks (Statistics and Data Support Section), and content creation for social media and promotion of the ČNB Visitor Centre, with a focus on financial literacy.

Theory and Practice Week

This annual event provides opportunities for research collaboration and teaching engagements (e.g., internships, student placements, and guest lectures). Each year, the event programme is expanded to increase industry engagement. Current partners include Deloitte, Coca-Cola, Lidl, e-Brána, NonStop Consulting, Generali Česká pojišťovna, P-PINK, regional and financial authorities, and other public and private institutions.

Spin-Off Company

Due to successful collaboration and impactful research results, FEA has been granted the opportunity to co-found a spin-off company. However, its establishment is planned for 2025.

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 Sale to the Company Principal Engineering					165/7
Total					165/7

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:

Each year, FEA organises a range of public lectures, workshops, and exhibitions, open not only to students and academics but also to the general public. These activities aim to:

- Disseminate research and innovation outcomes to students and the wider community,
- Enhance public awareness of science and research, including key scientific discoveries and the role of innovation,
- Promote lifelong learning and public engagement in academic discourse.

Public engagement and outreach events are designed to be accessible and engaging for all age groups, ensuring greater involvement of the local community.

Key Public Engagement and Outreach Initiatives

University of the Third Age (2018 – present)

A lifelong learning programme, offering a broad range of lectures on selected economic and humanities topics. Each lecture on economics also presents research findings from the lecturer (a faculty member) and includes other forms of research dissemination applicable in practice. Each semester, approximately 130 attendees participate.

Society and Its Governance Event (2022 – present)

An open public debate platform on current societal issues. The topics align with faculty research and thematic areas. For instance, in 2025, discussions will focus on the role of AI in socially beneficial activities and visions for the future of society. Each event gathers over a hundred participants, including students and members of the public.

Theory and Practice Week in Economics (2007 – present)

A week-long series of lectures and discussions, bringing together leading professionals from economics, management, public economy, regional development, finance, and IT. The event facilitates knowledge exchange between researchers, industry experts, and students. Around 70 expert lectures take place each year, attracting several hundred participants.

Researchers' Night & Science and Technology Fair (2019 – present)

Annual public engagement events where FEA academics actively participate in promoting science and research, especially among children and secondary school students. FEA students also take part as presenters, making research more accessible and engaging for younger audiences.

GIS Day (1999 – present)

A global public engagement initiative in which FEA's GIS experts participate, educating the public on geographic information systems (GIS). The event highlights the impact of GIS technologies on everyday life and showcases the latest advancements in the field.

Popular Mathematics and Physics Lectures (2019 – present)

Organised in collaboration with the Union of Czech Mathematicians and Physicists (Pardubice branch), these public lectures aim to present research findings and recent discoveries in mathematics and physics to a broad audience.

Specialised Public Engagement Initiatives for Specific Student Groups

FEA collaborates with external organisations to host **economics workshops, student academies, and specialised training programmes:**

- **Academy of Young Citizens (2019):** A programme designed to introduce secondary school students to local, regional, and national politics.
- **Regional Business Camp (2023):** A business-focused workshop targeting young individuals from children's homes and disadvantaged backgrounds in the Pardubice Region. The programme focused on entrepreneurship, business vision, and current trends.
- **Financial Literacy and Investment Instruments (2024 – present):** Workshops in collaboration with the Czech National Bank, designed for students and the professional public. In 2025, a specialised workshop will be held for secondary school teachers in financial education.

International Research Workshops on Circular and Regenerative Economy (2021 – present)

FEA researchers organise a series of workshops on **circular and regenerative economy**, focusing on **stakeholder behaviour and public policy development**.

- The first workshop in **2021** (*Workshop on Creating Business Models Towards Circular Economy*) featured prominent European scholars, including:
 - **Prof. Jen Horbach** (University of Applied Sciences Augsburg, Germany)^[1]
 - **Prof. Wolfgang Gerstlberger & Tarlan Ahmadov** (Tallinn University of Technology, Estonia)
- In **2022**, follow-up workshops included:
 - *Creating Business Models for Sustainability and Circular Economy*^[2]
 - *Workshop on Current Trends in Circular Economy and Eco-Innovation Research in European Countries*^[3]

These activities support FEA's strategic priority of fostering interdisciplinary and impactful research.

Specialised Legal Courses (2019 – present)

Each year, renowned US legal professionals deliver a week-long intensive course on US corporate and business law. The course, attended mainly by master's students in Public Sector Economics and Regional Development, provides cutting-edge legal insights and prepares students for potential international cooperation. The course is unique in the Czech Republic, making it highly sought after and consistently fully booked.

Examples of lecturers and topics:

- **Lisa Miller (California, USA):** Administrative judge, arbitrator, and trial lawyer
- **James Schoff:** Founder of Developers Diversified Realty Corporation (real estate investment trust)
- **Stacey Barnes:** International arbitration specialist

HTML links to additional documentation:

[1] <https://fes.upce.cz/prof-jens-horbach-na-fes>

[2] <https://fes.upce.cz/fes-poradala-workshop-creating-business-models-for-sustainability-and-circular-economy>

[3] <https://fes.upce.cz/workshop-on-current-trends-in-circular-economy-and-eco-innovation-research-in-european-countries-0>

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 2020, the **FEA Executive Board** defined a new **Faculty Development Strategy 2021+**, which explicitly incorporated the recommendations from **Module 3 of the International Evaluation Panel (IEP) Evaluation Report**. The following initiatives have been implemented:

- The faculty prioritises supporting its staff in research and creative activities to ensure these, alongside teaching responsibilities, are fully integrated into academic workloads. A well-developed system of individual work planning, performance evaluation, and career planning allows each academic to leverage their strengths in alignment with the faculty's strategic objectives. These activities include research project development and execution, applied research with practical impact, and contract research.
- The faculty has strengthened international collaboration, as evidenced by an increased number of academic staff participating in prestigious international networks such as EU-COST, as well as a higher number of submitted and approved projects within international consortia.
- Contract research projects have been continuously supported throughout the evaluation period, despite challenges posed by the COVID-19 pandemic. These projects primarily have regional impact, as they are conducted to address the needs of regional governments and the largest municipalities. Several contract research projects have also demonstrated potential for national and international application.
- The faculty adopts internal regulations governing knowledge transfer and intellectual property protection in accordance with University of Pardubice policies. In addition, the faculty has developed its own internal framework for the execution of contract research, scientific projects, and related activities. The faculty actively collaborates with industry partners through the University of Pardubice Knowledge and Technology Transfer Centre.

The Faculty Development Strategy has **reinforced key strengths**, including:

- The FEA's disciplinary focus on three core areas – economics, management, and informatics – which underpin all three levels of study programmes. In these fields, the faculty conducts internationally recognised research and has become an established academic institution. The faculty considers the synergistic integration of economics, management, and informatics to be a key strength.^[1]
- In 2020, the FEA Research and Science Centre was established, bringing together leading researchers from across the faculty, including from the Institute of Economic Sciences, the Institute of System Engineering and Informatics, and the Institute of Mathematics and Quantitative Methods. The centre serves as a hub for research activities, provides support to other faculty units, and plays a key role in training postdoctoral researchers and PhD students. The establishment of this centre has enabled the faculty to develop a strong scientific platform for generating internationally significant research outputs.

Comparison with the Previous IEP Evaluation

Comparing the faculty's position before the previous IEP assessment and the present, a significant increase in research outputs and overall impact is evident. The faculty leadership believes that FEA's

real-world impact has considerably expanded, as demonstrated by its research being incorporated into EU policies, including those of the Council of Europe and the European Commission, in areas such as research performance evaluation and legal frameworks for AI systems.

Additionally, the faculty has nurtured and developed a new generation of researchers who have successfully established their own research teams, secured competitive research grants, and produced high-impact scientific and applied research outputs with international recognition.

It is therefore evident that the faculty's strategy has been successfully implemented over the evaluation period. FEA is now a respected faculty that educates future economists for business and government leadership, with an emphasis on an individualised approach to learning. It fosters an environment where creativity and research flourish, allowing each individual to fully realise their potential.

HTML links to additional documentation:

[1] https://plu.mx/plum/a/policy_citation?doi=10.1016/j.knosys.2017.05.001&theme=plum-sciencedirect-theme&hideUsage=true

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)
Top 2% Scientists	3.2.1	https://topresearcherslist.com/Home/Profile/792134
Project: <i>Modelling the Dynamics of Determinants of National and Regional Productivity Based on Knowledge and Cooperation Effects</i>	3.3.1	https://starfos.tacr.cz/cs/projekty/GA17-11795S
Project: <i>Modelling Emotions in Verbal and Non-Verbal Managerial Communication for Predicting Corporate Financial Risks</i>	3.3.1	https://starfos.tacr.cz/projekty/GA19-15498S?query=sa3iaadcylfhq#project-main
Project: <i>Aspect-Based Sentiment Analysis of Financial Texts for Predicting Corporate Financial Performance</i>	3.3.1	https://starfos.tacr.cz/projekty/GA22-22586S
Project: <i>Design of a Dynamic Knowledge-Based Business Model Based on Open Innovation Principles</i>	3.3.1	https://starfos.tacr.cz/projekty/GA20-03037S?query=3p4aaac6pbja
Project: <i>Establishing New Educational and Training Priorities to Address Changing Labour Market Needs in the Transport, Postal, and ICT Sectors</i>	3.3.1	https://starfos.tacr.cz/projekty/TJ02000093#project-main
Project: <i>Structural Barriers and Opportunities for Cooperation and Integration of Post-Communist EU Countries in European Defence Cooperation</i>	3.3.1	https://starfos.tacr.cz/projekty/GA22-25205S#project-main
Workshop: <i>Workshop on Creating Business Models towards a Circular Economy</i>	3.6	https://fes.upce.cz/prof-jens-horbach-na-fes
Workshop: <i>Creating Business Models for Sustainability and the Circular Economy</i>	3.6	https://fes.upce.cz/fes-poradala-workshop-creating-business-models-for-sustainability-and-circular-economy
Workshop: <i>Workshop on Current Trends in Circular Economy and Eco-Innovation Research in European Countries</i>	3.6	https://fes.upce.cz/workshop-on-current-trends-in-circular-economy-and-eco-innovation-research-in-european-countries-0
Policy Citations of the Output: <i>Mining Corporate Annual Reports for Intelligent Detection of Financial Statement Fraud – A Comparative Study of Machine Learning Methods</i>	3.7	https://plu.mx/plum/a/policy_citation?doi=10.1016/j.knosys.2017.05.001&theme=plum-sciencedirect-theme&hideUsage=true

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: Faculty of Electrical Engineering and Informatics (FEEI)

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 Electrical Engineering and Informatics (FEEI)^[1] at the University of Pardubice was established in 2008, evolving from the former Institute of Electrical Engineering and Informatics. FEEI provides high-quality education at the bachelor's, master's, and doctoral levels while advancing research and development in electronics, communication, information, and control technologies. The faculty's mission is to equip students for successful careers in rapidly evolving technical fields and to drive technological advancement and innovation. Its vision is to sustain its current scope of activities while further strengthening its position as a leading centre for education and research. FEEI is committed to fostering a modern, open, and socially responsible academic environment with strong research and innovation potential, enhancing its competitiveness both nationally and internationally.

FEEI's strategic objectives focus on maintaining high-quality and impactful research outputs, promoting interdisciplinary collaboration, and strengthening partnerships with leading research institutions across both public and applied sectors. Study programmes are continuously updated to align with strategic labour market demands and emerging technological trends. Industry partnerships provide students with hands-on experience through real-world projects, enhancing their practical skills. Extensive international cooperation in research and education provides students, academics, and researchers with opportunities for global internships and participation in multidisciplinary projects.

FEEI primarily engages in both basic and applied research, as well as experimental development, with a strong societal impact. The faculty's research strategy is structured around the strategically

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

defined topics of Detection, Localisation, Identification, and Classification. Research and development activities focus on addressing contemporary challenges in modern technologies, including radar and satellite positioning systems, radio communication systems, antenna and microwave components, signal processing in electronic systems, and machine learning and deep learning for visual and large-scale data analysis. These technologies find applications in robotics, biomedicine, security research, and software simulations of technological processes in transport and industrial infrastructures. The faculty's R&D&I portfolio aligns with scientific disciplines such as Engineering and Technology (FORD 2), specifically Electrical Engineering, Electronic Engineering, Information Engineering (FORD 2.2), and Natural Sciences (FORD 1), specifically Computer and Information Sciences (FORD 1.2), with partial overlap into Civil Engineering (FORD 2.1) and Materials Engineering (FORD 2.5). Research results are typically designed for practical applications, contributing to industrial development and improvements in quality of life. Both educational and research activities are reinforced through international cooperation with European and non-European universities and other research institutions.

FEEI prioritises both basic and applied research, particularly in collaboration with industrial enterprises focused on innovation, addressing industry needs. Research activities are primarily conducted through project-based initiatives supported by grant funding and institutional support for research teams. Basic research efforts at the faculty include developing new algorithms for process control and optimising signal processing methods, which are subsequently validated through simulation tools and long-term experimental research. These activities are primarily supported at the research team level. The findings are further advanced in collaboration with industrial partners through application-oriented projects or, to a lesser extent, through contract research. FEEI's applied research projects are designed to achieve Technology Readiness Levels (TRLs) suitable for integration into technological manufacturing processes, prototype production, or pre-commercial product series. The faculty actively collaborates with both regional and international research institutions and industrial enterprises, engaging in all levels of R&D – from master's and doctoral research to large-scale international projects supported by national and international funders. Research activities are strategically planned to yield results that not only provide tangible societal benefits but also contribute significantly to scientific advancement. Another key area is contract research commissioned by industrial enterprises, aiming to deliver commercially viable solutions that leverage FEEI's expertise.

The academic self-governing bodies of FEEI include the Academic Senate, the Dean, the Scientific Board, and the Disciplinary Committee. Additional faculty bodies include the Faculty Secretary, the Study Programme Board, and the Editorial Board. The Development and Project Activities Office, faculty vice-deans, the faculty secretary, and the FEEI Research Centre report directly to the dean. The Vice-Dean for Internal Development and External Relations oversees the Promotion Office, ICT Support Office, and International Office. The Vice-Dean for Education and Quality supervises the Study Office. The Vice-Dean for Research has no directly subordinate units, coordinating activities in collaboration with department heads and research team leaders. The Faculty Secretary oversees the Finance and Operations Office. FEEI currently comprises four departments: Department of Information Technology, Department of Software Technologies, Department of Electronics and Radio Systems, Department of Automation and Mathematics^[2].

The structure of FEEI's academic and research staff, as detailed in Tables 3.1.1 to 3.1.3, reflects the systematic approach to staffing necessary for delivering study programmes in relevant educational fields, engaging in creative activities, and participating in research projects. In 2023, the faculty employed 48 academic and research staff, with a total workload equivalent to 43.25 FTE (full-time equivalent). Among these, 3 were women, with a combined workload of 2.91 FTE. Additionally, 14 technical and administrative staff members involved in research and development (R&D) worked at the faculty, with a total workload of 4.9 FTE, including 12 women with a combined workload

of 4.13 FTE. Academic and research staff are subject to an annual evaluation process based on comprehensive assessment tools covering education, R&D activities, engagement in key projects, and international cooperation. FEEI adheres to the University of Pardubice's HRS4R (Human Resources Strategy for Researchers) Action Plan. Senior staff follow internal guidelines for research management, evaluation of research activities, production of high-quality research outputs, and development of international collaboration. Employees follow a Qualification Growth Plan, which is assessed and discussed annually between heads of departments and the dean.

During the most recent evaluation period, FEEI offered 12 study programmes, some of which were also available in a part-time format. Bachelor's degree programmes: Communication Technology, Applied Electrical Engineering (professionally oriented), Automation, Information Technology, Web Technologies (newly introduced, professionally oriented). Master's degree programmes: Communication and Radar Systems, Automatic Control, Information Technology. Doctoral degree programmes: Electrical Engineering and Informatics, Electrical Engineering and Informatics (offered in English).

HTML links to additional documentation:

[1] <https://fei.upce.cz/en>

[2] <https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M3%20Faculty%20of%20Electrical%20Engineering%20and%20Informatics>

Table 3.1.1 – Staffing per FTE²

Academic/ Professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	3.00/0	3.01/0	3.00/0	3.00/0	2.77/0	14.78/0
Associate Professor	7.38/0.00	8.08/0	8.61/0	7.97/0	6.67/0	38.71/0
Assistant Professor	20.85/3.65	21.22/3.29	20.93/2.70	21.18/2.78	22.13/2.88	106.31/15.30
Assistant	11.13/0.50	12.30/0.82	11.35/0.70	12.42/0.45	9.68/0.03	56.88/2.5
R&D Personnel ³						
Researchers in other categories ⁴	1.42/0	1.09/0	1.71/0.04	2.33/0.17	2.00/0	8.55/0.21
Technical and economic staff ⁵	5.26/4.35	5.26/4.35	5.37/4.53	5.57/4.58	4.9/4.13	26.36/21.94
Scientific, research and development staff involved in teaching activities	1.00/0	1.00/0	1.00/0	1.00/0	1.00/0	5.00/0
Early career researchers ⁶	9.07/1.62	7.40/1.40	7.01/0.74	6.86/0.62	5.15/0.03	35.49/4.41
Total ⁷	49.04/8.5	50.96/8.46	50.97/7.97	52.47/7.98	48.15/7.04	251.59/39.95

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							2				1	
Associate Professor			2		4		1		3			
Assistant Professor			6	1	12	1	2	1	2			
Assistant	2	1	5		3		1		2			
R&D Personnel ⁹												
Researchers in other categories ¹⁰									1	0		
Technical and economic staff ¹¹	1	1	3	3	6	5	4	3				
Scientific, research and development staff involved in teaching activities									1	0		
Early career researcher ¹²	2	1	7	1								
Total ¹³	3	2	16	4	25	6	10	4	8	0	1	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							1		1		1	
Associate Professor					5		2		1		1	
Assistant Professor			6		14	2	4		2	1	1	
Assistant	1				4		1		1			
R&D Personnel ¹⁵												
Researchers in other categories ¹⁶					1				1			
Technical and economic staff ¹⁷	1	1	2	2	6	5	2	2	1			
Scientific, research and development staff involved in teaching activities									1			
Early career researcher ¹⁸	1		5									
Total ¹⁹	2	1	8	2	30	7	10	2	7	1	3	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.

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	476	28	523	34	565	39	437	30	550	58	2551	189
Master's ²⁰	74	1	73	3	84	6	119	11	85	7	435	28
Doctoral	39	5	40	4	34	3	35	2	29	2	177	16
Lifelong Learning Courses												
Total	589	34	636	41	683	48	591	43	664	67	3163	233

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	3/0	1/0	5/0	1/0	6/0	1/0	6/0	1/0	7/0	2/0	27/0	6/0
Master's	4/0		4/0		5/0		4/0		3/0		20/0	
Doctoral	2/1		2/1		2/1		2/1		2/1		10/5	
Lifelong Learning courses												
Total	9/1	1/0	11/1	1/0	13/1	1/0	12/1	1/0	12/1	2/0	57/5	6/0

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		Zvolte položku.	38
	1.2 Computer and information sciences	38	Balanced basic and applied 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	4	Balanced basic and applied research	62
	2.2 Electrical engineering, Electronic engineering, Information engineering	54	Balanced basic and applied research	
	2.3 Mechanical engineering		Zvolte položku.	
	2.4 Chemical engineering		Zvolte položku.	
	2.5 Materials engineering	4	Balanced basic and applied research	
	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.	
	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		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.	
	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:

Between 2019 and 2023, FEEI significantly strengthened its position in the research community. This progress was driven by active participation in consortia with leading research institutions and university departments across the EU and beyond, collaboration with industrial enterprises recognised as technological leaders in relevant FORD disciplines, and membership in international associations and organisations. As a result of these interconnected activities, FEEI has been involved in major research projects, including those with international participation. The faculty's research outputs contribute to further development conducted by project partners, while faculty members receive prestigious awards, serve on editorial boards of international scientific journals, deliver keynote lectures, and participate in the evaluation process of national and European research projects. To further develop international cooperation, FEEI hosts lectures by foreign researchers engaged in joint projects, including opportunities for doctoral students, postdoctoral researchers, and international staff. These efforts are complemented by a range of services provided to the research community, including contract and collaborative research, access to research infrastructure for project and contractual partners, specialist training, and research and analytical services.

FEEI strengthens its position in the research community through the strategic support of the Faculty Research Centre, which plays a key role in implementing high-impact projects and engaging staff from other departments in research activities. The Research Centre is responsible for defining research objectives and overseeing the work of FEEI's specialised research teams^[1], which contribute to the faculty's R&D&I portfolio. Both the Research Centre and research teams actively collaborate with institutions in the Czech Republic and abroad, seek funding opportunities for joint projects, and participate in professional associations such as IEEE. Research teams also coordinate the shared use of laboratory equipment, with FEEI investing in faculty research laboratories and CEMNAT (Centre for Materials and Nanotechnologies). Partner universities and research organisations, along with selected awards, memberships, and activities of FEEI staff, are detailed in the following sections.

FEEI has received prestigious awards that underscore its excellence in research and innovation. Doc. Ing. Aleš Filip, CSc., was awarded the Galileo Masters 2020 prize by the European Commission^[2], a highly regarded recognition for advancements in satellite navigation. Prof. Ing. Petr Doležel, Ph.D., and doc. Ing. Jan Pidanič, Ph.D., were appointed IEEE Senior Members^{[3],[4]}, acknowledging their significant contributions to electrical and electronic engineering and related fields. Additionally, FEEI staff actively participate in IEEE societies such as the Communications Society, Antennas and Propagation Society, Signal Processing Society, and Computer Society, collaborating with academic peers in organising international conferences.

FEEI's academic and research staff serve as members of editorial boards for several international scientific journals and have delivered numerous invited lectures at prestigious foreign institutions and conferences. These lectures primarily focus on research areas within Computer Science, Electrical and Electronic Systems, and their applications. FEEI representatives have presented research findings through lectures at institutions such as Western Norway University of Applied Sciences – *"A Survey of Social Network Analysis"*, University of Burgos – *"Precision Viticulture"*, Zagreb University of Applied Sciences – *"Neural Networks in Process Control"*, University of Cape Town and Indian Institute of Technology – lectures on target detection and classification using deep learning and artificial intelligence tools.

As part of its international collaboration, FEEI hosts guest lectures by distinguished foreign researchers in fields aligned with the faculty's research priorities. These experts come from universities and research institutions with which FEEI fosters partnerships in staff and student mobility, joint research publications, participation in technical and organisational conference committees, editorial board memberships, and collaborative project initiatives. Supporting doctoral students at partner institutions is an integral aspect of this cooperation. Notable institutions whose researchers have delivered invited lectures at FEEI include the Indian Institute of Technology Guwahati, University of Burgos, University of Cape Town, and University of Indonesia. Likewise, FEEI faculty members regularly give lectures at these partner institutions.

FEEI's academic and research staff play an active role in evaluating R&D&I outputs at both national and European levels. Ing. Jan Panuš, Ph.D. participated in the assessment of project proposals within the TACR Sigma and TACR Zeta programmes in 2020, as well as the LUAIZ24 bilateral project between the Czech Republic and Israel in 2022. Prof. Ing. Petr Doležel, Ph.D. contributed to the evaluation of projects under the VEGA programme and the OP PIK Applications scheme. Doc. Ing. Jan Pidanič, Ph.D. was involved in the evaluation of projects within Horizon 2020, Horizon Europe, Inter-Excellence I-II, and Inter-Action programmes.

FEEI actively contributes to the research community by organising international conferences, leading research groups, and collaborating with industry partners on applied research. These activities not only reinforce FEEI's position within the academic and research community but also drive the development of new technologies and innovations. During the evaluation period (2019–2023), FEEI hosted three key international scientific conferences that focused on the latest advancements and trends in radio and radar systems, microwave technology, signal processing, and modern communication technologies: Microwave and Radio Electronics Week (MAREW), Radioelektronika, and COMITE.

Additionally, FEEI, in collaboration with representatives from partner institutions and industrial enterprises, plays an active role in organising international conferences, contributing to their technical programme committees (TPCs) and peer review processes. Notable conferences include NTSP (New Trends in Signal Processing), ELMAR (Electronics in Marine), SOCO (International Conference on Soft Computing Models in Industrial and Environmental Applications), Biosignals (International Conference on Bio-inspired Systems and Signal Processing), and AETA (International Conference on Advanced Engineering – Theory and Applications).

FEEI also offers specialist training programmes tailored for the industrial sector and other stakeholders. These programmes provide participants with advanced knowledge and practical skills applicable to research and development in key areas such as informatics (programming techniques), automation (artificial intelligence applications), and electrical engineering (microwave technology). Training sessions may conclude with an examination and the issuance of a certification verifying the acquired competencies.

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. Aleš Filip, CSc.	Galileo Masters 2020	European Commission
prof. Ing. Petr Doležel, Ph.D.	IEEE Senior Member	IEEE – Institute of Electrical and Electronics Engineers
doc. Ing. Jan Pidanič, Ph.D.	IEEE Senior Member	IEEE – Institute of Electrical and Electronics Engineers
doc. Ing. Aleš Filip, CSc.	Member of the International RTCM SC-134 Standardisation Committee	RTCM (Radio Technical Commission for Maritime Services) ^[5]

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. Petr Doležel, Ph.D.	Frontiers in Big Data, ISSN 2624-909X ^[6]
prof. Ing. Petr Doležel, Ph.D.	Frontiers in Artificial Intelligence, ISSN 2624-8212 ^[7]
Mgr. Jaroslav Marek, Ph.D.	Research in Statistics, ISSN 2768-4520 ^[8]
RNDr. Jaromír Zahrádka, Ph.D.	Journal of Applied and Computational Sciences, ISSN 2980-0374
doc. Ing. Michael Bažant, Ph.D.	Journal of Advanced Transportation ISSN 2042-3195 (SI guest editor) ^[9]
prof. Ing. Petr Doležel, Ph.D.	Journal of Advanced Transportation ISSN 2042-3195 (SI guest editor) ^[9]
doc. Ing. Michael Bažant, Ph.D.	Electronics ISSN 2079-9292 (SI guest editor) ^[10]

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. Jan Panuš, Ph.D.	A Survey of Social Network Analysis	Western Norway University of Applied Sciences, Norway	2022
prof. Ing. Petr Doležel, Ph.D.	Precision viticulture	University of Burgos	2022
prof. Ing. Petr Doležel, Ph.D.	Detection and Classification Techniques for Industrial Robotics	NTNU Gjøvik	2019
prof. Ing. Petr Doležel, Ph.D.	Neural Networks in Process Control	Zagreb University of Applied Sciences	2019
Ing. Daniel Honc, Ph.D.	Model Predictive Control Theory and Recent Applications	University of Palermo	2022
doc. Ing. Jan Pidanič, Ph.D.	Detection, classification of the targets with AI, NN and DNN techniques	University of Cape Town	2021
doc. Ing. Jan Pidanič, Ph.D.	Detection, classification and localisation of the targets with information delivered from the different domains	Indian Institute of Technology, Guwahati	2022
Ing. Zdenek Němec, Ph.D.	Radar data flow in modern radar systems	Indian Institute of Technology, Guwahati	2023
Ing. Luboš Rejček, Ph.D.	Whitening Filters Application for Ionospheric Propagation Delay Extraction	Ton Duc Thang University	2023
doc. Dr. Ing. Tomáš Brandejský	Memetic Algorithm with GPU Optimisation	University of Ljubljana	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
Prof. Jerry Chun-Wei Lin	Western Norway University of Applied Sciences, Norway	Leveraging unlabelled data to increase the efficiency of machine learning.	2022
Prof. Bruno Baruque Zanon	University of Burgos	Features and Models for Human Activity Recognition	2019
Prof. Konstantin Lukin	Institute for Radiophysics and Electronics, NASU Ukraine	MIMO Noise Radar and 3D Imaging	2020
Prof. Amit Mishra Kumar	University of Cape Town	Automatic target recognition and possibilities of applying radar in SDG challenges	2022
Dr. Hanumant Shekavak	Indian Institute of Technology, Guwahati	Comparison of Floating-point Representations for the Efficient Implementation of Machine Learning Algorithms	2023
Dr. Stephen Payne	University of Cape Town	Low-cost Non-contact Monitoring of Small Motions in the Human Body	2022
Prof. Huyhn Van	Ton Duc Thang University	New sliding mode observer design for the load frequency control of power system	2022
Assoc. Prof. Dr. Abdullah Bin Muhammed	Universiti Putra Malaysia	Distributed Computing, Scheduling in Wireless Sensor Network/Grid/Cloud, Heuristic and Optimisation	2023
Prof. Heru Suhartanto	Faculty of Computer Science, University of Indonesia	Parallel Programming in Multicores and Cluster	2023
Prof. Gaurav Trivedi	Indian Institute of Technology, Guwahati	High-Performance Computing, Cloud/Edge Computing, and Computing for Communication System	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 project/programme call research	Name of the contracting authority/guarantor of the project/programme call	Year
Ing. Jan Panuš, Ph.D.	Technology Agency of the Czech Republic (TACR)	TACR Sigma	2020
Ing. Jan Panuš, Ph.D.	Technology Agency of the Czech Republic (TACR)	TACR Zéta	2020
Ing. Jan Panuš, Ph.D.	Ministry of Education, Youth and Sports (MŠMT)	LUAIZ24 (Bilateral Projects between the Czech Republic and the State of Israel)	2022
prof. Ing. Petr Doležel, Ph.D.	VEGA	Scientific Grant Agency of the Ministry of Education, Research, Development and Youth of the Slovak Republic and the Slovak Academy of Sciences (VEGA)	2023
prof. Ing. Petr Doležel, Ph.D.	Operational Programme Enterprise and Innovation for Competitiveness – Application (OP PIK – Application)	Ministry of Industry and Trade of the Czech Republic	2019
doc. Ing. Jan Pidanič, Ph.D.	Innovative Training Networks, Marie Skłodowska-Curie Actions Doctoral Networks	H2020, Horizon Europe	2019
doc. Ing. Jan Pidanič, Ph.D.	Inter-Excellence I-II, Inter-Action	MŠMT	2019
doc. Ing. Aleš Filip, CSc.	Fundamental Elements	EUSPA – European Union Agency for the Space Programme	2022

Note: Provide up to 10 examples.

HTML links to additional documentation:

- [1] <https://fei.upce.cz/en/fei/research-team-of-petr-dolezel>
<https://fei.upce.cz/en/fei/research-team-of-tomas-zalabsky>
<https://fei.upce.cz/en/research-team-of-tomas-brandejsky>
- [2] <https://fei.upce.cz/en/university-of-pardubice-receives-galileo-masters-prize-2020>
- [3] <https://ieeexplore.ieee.org/author/37397284000>
- [4] <https://ieeexplore.ieee.org/author/37072639500>
- [5] <https://www.rtcn.org/committees>
- [6] <https://loop.frontiersin.org/people/2140949/overview>
- [7] <https://loop.frontiersin.org/people/2140949/overview>
- [8] <https://www.tandfonline.com/journals/urist20/about-this-journal#journal-metrics>
- [9] <https://onlinelibrary.wiley.com/doi/toc/10.1155/1409.si.635010>
- [10] https://www.mdpi.com/journal/electronics/special_issues/Visual_Decision

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:

During the evaluation period, FEEI was successfully awarded numerous significant national and international research projects. These included projects funded under the Horizon 2020 (H2020) programme of the European Commission, the NAVISP programme of the European Space Agency, and national projects supported by the Operational Programme Research, Development and Education (OP VVV) and INTER-EXCELLENCE programmes of the Ministry of Education, Youth and Sports (MŠMT), the Technology Agency of the Czech Republic (TACR), and calls of the Ministry of Industry and Trade (MPO) within the Operational Programme Enterprise and Innovation for Competitiveness (OP PIK). FEEI was the lead beneficiary in six research projects, securing total funding of CZK 42.577.000 (EUR 1.679.566), and acted as a co-beneficiary in eighteen projects, with total funding of CZK 31.517.000 (EUR 1.243.274). Additional funding exceeding CZK 100.000.000 (EUR 4.000.000) was covered through development projects within OP VVV, OP JAK, and the National Recovery Plan (NPO) to support education, research, and creative activities, including investments in laboratory equipment, computing technology, and other expenses. Further projects aimed at the internationalisation of education and the development of postgraduate studies were implemented through various Erasmus+ programmes and Norwegian funds.

The ten most significant research projects/activities selected for this evaluation include the following:

Cooperation in Applied Research between the University of Pardubice and Industry in the Field of Positioning, Detection, and Simulation Technology for Transport Systems (PosiTrans)^[1]

The project aimed to strengthen and develop cooperation between research organisations and industry in the metropolitan area within the fields of electrical engineering and information technology. In addition to FEEI as the lead beneficiary, the project involved key regional industrial partners, including radar companies RETIA and ERA, electronic producers Mikroelektronika and RADOM, software companies CD-IS and OLTIS Group.

The project successfully enhanced inter-sectoral and interdisciplinary collaboration in the metropolitan area, accelerating the application of the latest advances in radio and other contactless technology for industrial infrastructure or traffic management systems. Research activities were conducted by expert teams in cooperation with project partners and industry stakeholders. Partial

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.

results were published in scientific journals, with additional articles prepared on various research aspects. The findings were also presented at international conferences. Collaboration with international research institutions was an integral part of the project, including a research internship for selected team members at the University of Burgos and the visit of an international expert to FEEI. In total, the project contributed to 118 scientific outputs, primarily in the form of peer-reviewed journal articles and international conference contributions.

The project has made a significant contribution to FEEI's mission, which focuses on supporting innovation, applied research, and industry collaboration.

Smart Contactless Technology Development for Smart Fencing^[2]

The objective of this project was to conduct applied research in contactless technology incorporating artificial intelligence (AI) elements. The newly developed electronic system was designed for use in intelligent detection devices and security systems aimed at monitoring large areas and distinguishing between relevant and non-relevant targets. The system enables the detection, identification, and classification of objects of various sizes using radio frequency sensors, imaging sensors, and optical sensors.

The project was carried out in collaboration with the Indian Institute of Technology Guwahati, resulting in 14 research outputs, including a functional prototype of a radar sensor based on Software-Defined Radio (SDR) technology. The project outcomes represent significant advancements in sensor technology for object detection and tracking, integrating an optical layer for object classification using neural networks. The detection subsystem employs SDR technology operating on a pulsed radar principle. The primary function of the radar sensor is to secure sensitive areas and perimeters. Its modular architecture allows for future expansion and upgrades.

The functional prototype is a device designed for target detection and tracking. The radar sensor features a single transmitting antenna that covers the designated area with a radar signal. The transmitted signal is generated by the SDR subsystem and gained by a power amplifier. Signal reception is handled by an antenna array comprising eight elements, with each receiving element independently connected to the receiving channels of the SDR subsystem. The radar sensor is controlled by a sensor controller, which receives radar mode configurations via an operator interface. These configurations include transmission and reception timing as well as the waveform of the transmitted pulse. The unit is capable of detecting and tracking small aerial objects, such as drones, which pose security risks to critical infrastructure and public events. The system can be deployed to monitor and secure the perimeters of high-security areas, including military bases, airports, and industrial facilities.

This bilateral project was jointly implemented by FEEI and the Indian Institute of Technology Guwahati.

SmartRail – Automated Data Analysis for Rail Freight Transport^[3]

The SmartRail project aims to develop the SmartAnalytics methodology to improve the economic efficiency and safety of rail freight transport. Launched in 2023, this methodology defines processes and methods for the continuous automated analysis of selected operational data in freight railway transport. The analysis enables the timely identification and resolution of rolling stock defects (through detection or prediction), as well as the identification of infrastructure issues and operational challenges related to cargo handling.

The project utilises multi-source data, including intelligent railcars that have experienced critical incidents (e.g. excessive impacts) and fixed infrastructure monitoring points that detect technical issues (e.g. overheating bearings). The methodology will be validated through a large-scale case study.

The research is conducted by FEEI, University of Pardubice, as the lead beneficiary, in cooperation with the industrial partner ČD Cargo.

Conditions for Deploying Train Locators Based on GNSS Systems on the Railway Network^[4]

The primary objective of this project was to define the conditions for implementing Global Navigation Satellite System (GNSS) technology on the Czech railway network, based on validation in real conditions. The project focused on assessing the impact of the railway environment on GNSS signals to verify the conditions and requirements for deploying components for train localisation systems. Additionally, it involved developing a testing methodology for evaluating GNSS signal reception quality and interference levels on Czech railway lines, ensuring compliance with international standards for electronic systems in railway applications.

The key project outcome was a methodology approved by the Czech Ministry of Transport. This methodology establishes the framework for deploying GNSS-based localisation systems on Czech railways and for the subsequent certification of train locators for non-safety-critical applications. While train locators require reliable and secure signal reception, they do not function as safety devices or intervene in train operations. The certification methodology for GNSS-based localisation systems intended for railway use, taking into account railway environmental factors, is designed to serve as a framework for the certification process of new GNSS-based localisation systems. Certification will be required when technology companies introduce a new technical solution, using the proposed methodology as a guideline to prepare for the certification process.

The lead beneficiary was the GNSS Centre of Excellence, a consortium of legal entities, with additional project partners including FEEI, AŽD Praha, and the Railway Research Institute (Výzkumný Ústav Železniční).

System Suitability Study for Train Positioning Using GNSS in ERTMS (2020)^[5]

The objective of this project was to assess the feasibility of utilising the current generation of Satellite-Based Augmentation System (SBAS) geostationary overlay services for the further development of the European Rail Traffic Management System (ERTMS) with a virtual balise detected via GNSS. The study focused on the current generation of the European SBAS system, specifically EGNOS v2 (which supports GPS L1 only), and included the following key aspects: Evaluation and consolidation of requirements, including assumptions for detecting virtual balises within ERTMS using GNSS; Analysis of the suitability of the current EGNOS system for application in ERTMS, confirming the feasibility of its existing configuration; Assessment of the acceptability of the current EGNOS safety case, in terms of mutual recognition by railway safety authorities, conducted by an independent safety assessor.

This project represents a key step towards integrating GNSS into railway safety applications and contributes to the development of innovative solutions such as virtual balise detection in ERTMS. The findings of this study will support the railway industry in refining safety assumptions and allocations for GNSS within the ERTMS virtual balise reader subsystem.

The lead coordinator was **GMV NSL (United Kingdom)**, with project partners including **FEEI, Telespazio UK (UK), TÜV Rheinland UK (TÜV), and GMV Innovating Solutions (Romania)**.

Next-Generation AI-Based Online Monitoring for Gearbox Diagnostics^[6]

The objective of this project was to develop an intelligent diagnostic system for automated online monitoring and real-time diagnostics of gearbox conditions in large industrial machinery, thereby enhancing maintenance efficiency, reducing repair costs, and minimising production downtime. The project utilised an advanced artificial intelligence (AI) system to analyse data collected from gearboxes, including vibrations, acoustic emissions, torque, temperature, and oil cleanliness. This multi-source data analysis enables accurate diagnostics and failure prediction. The AI algorithms integrated into the system were specifically designed to detect anomalous patterns that indicate early-stage mechanical issues. This predictive approach provides detailed insights into gearbox performance, allowing for timely interventions and proactive maintenance strategies.

The project resulted in a functional prototype of a control and evaluation unit for measuring key gearbox diagnostic parameters and a functional prototype of a data converter for integrating acoustic emission measurements into online monitoring. These subsystems, primarily developed at FEEI, have been commercialised since 2024 and are now being implemented in industrial applications. The project's outputs are applicable in industrial sectors where online monitoring and diagnostics of rotating and vibrating mechanical components are essential, particularly in manufacturing and engineering industries and construction industry.

The research was conducted by FEEI, University of Pardubice, in collaboration with the lead beneficiary, Wikov MGI, and an additional partner, Výzkumný a zkušební ústav Plzeň (Research and Testing Institute Plzeň).

Development of a Deployment Methodology for 802.11p-Based Communication Technology^[7]

This contract research focused on the applied validation of new communication technologies for data transmission between fixed infrastructure elements or roadside units (RSUs) in railway and road systems and vehicles equipped with onboard units (OBUs). To ensure the reliability of data transmission, new antenna and microwave components were designed. The communication interface used in this research was the DSRC (Dedicated Short-Range Communications) 802.11p platform operating in the 5 GHz band, a technology already successfully deployed for wireless communication between vehicles and highway control points. Long-term testing was conducted using one-way broadcasting of information related to level crossing protection systems, including the current status of the crossing and its precise location, synchronised via a GNSS signal.

The developed methodology also provides generalised procedures for deploying next-generation 5G communication technologies under the Future Railway Mobile Communication System (FRMCS) standard, which will either replace or complement the existing GSM-R technology for railway safety applications.

The contract research was commissioned and supervised by AŽD Praha and RADOM, which conducted verification of new communication technologies within the pan-European pilot project C-ROADS. The C-ROADS CZ segment specifically focused on the deployment of Cooperative Intelligent Transport Systems (C-ITS) technology. The C-Roads Platform brings together companies and research organisations from 19 European countries.

Research and Development of an Active Antenna System for Target Detection with Polarimetric Measurement Support^[8]

The project focused on the research and development of a novel active radar antenna system with support for polarimetric signal processing. This system comprises two primary antenna subsystems – transmitting and receiving – each consisting of multiple elementary antenna elements interconnected through signal distribution networks. The developed antenna system serves as

a foundation for constructing advanced radar systems capable of detecting, locating, and classifying targets with low fluctuating radar cross-sections, such as drones, persons, and other UAVs.

The project's key outcomes include a functional prototype of a hardware radar antenna system and a utility model for a primary radar sensor antenna with polarimetric measurement support. The proposed antenna system can be integrated into forthcoming radar systems for various applications, including monitoring restricted areas such as power plants, military facilities, and airports. With its highly precise measurement capabilities and advanced analysis of polarimetric properties, the system represents a unique technical solution.

The lead organisation for the project was ELDIS Pardubice, FEEI at the University of Pardubice, as a key project participant, was responsible for the design, optimisation, and validation of the transmitting and receiving antenna subsystems, ensuring the functionality of the entire primary radar sensor antenna with polarimetric measurement support. The project was highly interdisciplinary, requiring expertise in electrical engineering, informatics, and materials science.

This research project is now being further developed through the ongoing initiative "PROSPEKTOR II – Research and Development of a Next-Generation Radar Sensor Based on a Polarimetric Active Antenna System" (FW10010468), which aims to enhance the multifunctionality and performance of radar sensors by building upon the previously designed antenna system.

EGNSS High-Integrity Layer for Multimodal Green Transport – HELMET^[9]

The project focused on the use of European GNSS (EGNSS) systems, including EGNOS and Galileo, to develop high-precision, high-integrity positioning services for safe mobility applications. The objective was to provide new EGNOS- and Galileo-based solutions for connected and autonomous vehicles, railway safety, and UAV (drone) surveillance systems for road and railway infrastructure. A key aim was to establish a cyber-secured multimodal, multi-sensor integrity monitoring architecture using an EGNSS-based high-integrity layer.

The system's development was aimed at implementing a highly integrated Location Determination System (LDS) for automotive and railway applications. The project involved the development of innovative algorithms incorporating a multi-sensor architecture, which were tested at the EMERGE test facility in L'Aquila, Italy. A major goal was to contribute to sustainable mobility by reducing energy consumption and emissions. The project leveraged the expertise of a consortium that applied SBAS-EGNOS technology to establish a multi-frequency, multi-sensor domain, mitigating risks in land transport.

HELMET was an interdisciplinary project integrating advanced EGNSS positioning technology with autonomous vehicle applications, UAV (drone) applications, satellite communication and electronics, automation, robotics, and artificial intelligence.

The project was coordinated by Radiolabs (Italy) and involved a consortium of international partners. Project Coordinator: Radiolabs (Italy). Project Partners: DLR (Deutsches Zentrum für Luft- und Raumfahrt, Germany), Sogei (Italy), Stanford University – GNSS Team (USA), RoboAuto (Czech Republic), Kentro Kainotomon Technologion (Greece), FEEI, University of Pardubice (Czech Republic).

Research and Development of the Next Generation of the FareOn NextGen Intelligent System^[10]

The project focused on the development of an advanced fare collection system for public transportation, integrating modern technologies to enhance transport management and passenger monitoring. As part of the project, an image sensor was designed to collect and analyse visual data

from transport environments. This sensor monitors passenger numbers and movement in real time, utilising advanced computer vision and artificial intelligence (AI) algorithms.

Additionally, the project involved the development of five key software modules responsible for hardware management, visual data processing, and integration with existing transport systems. The primary objective was to automate and optimise fare collection processes, reducing operational costs and improving efficiency. The system combines data collection with advanced analytics, leveraging machine learning for predictive modelling and decision-making, ultimately improving traffic flow and the efficiency of fare collection. Project outputs were tested under real-world conditions to validate functionality and enable adaptation to the specific needs of transport operators.

The lead beneficiary of the project was Mikroelektronika, while FEEI at the University of Pardubice, as a co-beneficiary, focused on the design, implementation, and optimisation of advanced machine learning and artificial intelligence methods.

HTML links to additional details about the projects:

- [1] https://starfos.tacr.cz/en/projekty/EF17_049%2F0008394?query=46vqaadgy3aq
- [2] <https://starfos.tacr.cz/en/projekty/LTAIN19100>
- [3] <https://starfos.tacr.cz/en/projekty/CK04000041?query=zpxaaac6uysa#project-main>
- [4] <https://starfos.tacr.cz/en/projekty/TIRSMD707?query=ygnaaadhcmqa>
- [5] <https://navisp.esa.int/project/details/40/show>
- [6] <https://starfos.tacr.cz/en/projekty/FW03010244?query=yxxaaac733jq>
- [7] <https://www.c-roads.eu/platform.html>
- [8] https://starfos.tacr.cz/en/projekty/EG20_321%2F0024570?query=r2xiaadapuaa#project-main
- [9] <https://www.helmet-project.eu/>
- [10] https://starfos.tacr.cz/en/projekty/EG20_321%2F0024668

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
Ministry of Education, Youth and Sports (MŠMT CR)	OP VVV Cooperation between the University of Pardubice and Industry in Applied Research of Positioning, Detection, and Simulation Systems for Transport and Freight Processes (PosiTrans)	14 544 / 573 728	5 732 / 226 114	7 132 / 281 341	5 297 / 208 955	
Technology Agency of the Czech Republic (TACR)	ZÉTA Programme Software Simulation Support for Determining the Capacity of Railway Station Infrastructure	671 / 26 469	1 112 / 43 866	453 / 17 870		
Technology Agency of the Czech Republic (TACR)	ZÉTA Programme Intelligent Firewall for Industrial Networks	413 / 16 292				
Ministry of Education, Youth and Sports (MŠMT CR)	INTER-ACTION Development of Contactless Technology for Intelligent Perimeter Protection		1 438 / 56 726	1 458 / 57 515	1 372 / 54 122	
TACR – Transport 2020+ Programme	SmartRail – Automated Data Analysis for Freight Railway Transport				1 819 / 71 755	
Technology Agency of the Czech Republic (TACR)	GAMA Programme Universal Programmable Image Sensor		819 / 32 308	317 / 12 505		
Total		15 628 / 616 489	9 101 / 359 014	9 360 / 369 231	6 669 / 263 077	1 819 / 71 755

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.

In the role of another participant						
Provider ²⁷	Project name	Support (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
Technology Agency of the Czech Republic (TACR) BETA Programme	Proposal and Validation of Conditions for Deploying Safe GNSS-Based Train Locators on the Czech Railway Network	166 / 6 548	192 / 7 574	284 / 11 203	43 / 1 696	
European Space Agency NAVISP Programme (France)	System Suitability Study for Train Positioning Using GNSS in ERTMS in 2020	518 / 20 434	482 / 19 014			
Technology Agency of the Czech Republic (TACR) GAMA Programme	Smart System for Automated Weld Quality Evaluation	316 / 12 465				
Ministry of Industry and Trade (MPO CR) APPLICATION Programme	Development of Technology for Intelligent Management of Goods Transport Flows	2 648 / 104 458	2 603 / 102 682	288 / 11 361		
EU Horizon 2020	EGNSS High-Integrity Layer for Multimodal Green Transport – HELMET		1 473 / 58 107	1 247 / 49 191	198 / 7 811	
Ministry of Industry and Trade (MPO CR) TRIO Programme	Microwave Power Amplifier	589 / 23 235	210 / 8 284			
Ministry of Industry and Trade (MPO CR) TRIO Programme	Passive Locator for Securing and Enhancing the Accuracy of ADS-B/MLAT Systems	780 / 30 769				
Ministry of Industry and Trade (MPO CR) TRIO Programme	System for Detecting Small Flying Objects in Airport Areas	445 / 17 554				
Ministry of Industry and Trade (MPO CR) TRIO Programme	Use of Modern Microelectronic Components to Enhance the Functional Properties of Primary Radar	454 / 17 909				

²⁷ Ibid.

Ministry of Industry and Trade (MPO ČR) APPLICATION Programme	Research and Development of an Intelligent System for Thermal Food Processing Control		268 / 10 572	1 079 / 42 564	2 329 / 91 874	
Ministry of Industry and Trade (MPO ČR) APPLICATION Programme	Research and Development of an Intelligent System for Urban Taxi and Social Transport Management	491 / 19 369	267 / 10 533			
Technology Agency of the Czech Republic (TA ČR) TREND Programme	Next-Generation AI-Based Online Monitoring for Gearbox Diagnostics		1 115 / 43 984	1 253 / 49 428	923 / 36 410	
Ministry of Industry and Trade (MPO ČR) APPLICATION Programme	Development of an IoT Platform for Advanced Monitoring and Data Analysis			432 / 17 041	1 089 / 42 959	334 / 13 176
Ministry of Industry and Trade (MPO ČR) APPLICATION Programme	Research and Development of an Active Antenna System for Target Detection with Polarimetric Measurement Support			485 / 19 132	1 269 / 50 059	563 / 22 209
Ministry of Industry and Trade (MPO ČR) APPLICATION Programme	Research and Development of a Modular Automated Production Line Based on Innovative Robotic Modules and Its Application in the Manufacturing of Medical Catheters			701 / 27 653	1 252 / 49 389	567 / 22 367
Ministry of Industry and Trade (MPO ČR) APPLICATION Programme	Research and Development of the Next Generation of the FareOn NextGen Intelligent System			700 / 27 613	1 436 / 56 647	977 / 38 540
Ministry of Industry and Trade (MPO ČR) APPLICATION Programme	Development of Technology for Intelligent Management of Goods Transport Flows – Part II: Optimisation and Expansion					1 051 / 41 460
Total		6 407 / 252 741	5 495 / 216 766	6 331 / 249 742	8 869 / 349 863	4 415 / 174 162

Table 3.3.2 – Contract research activities

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
RADOM	Development of a Deployment Methodology for 802.11p-Based Communication Technology	797 / 31 440	358 / 14 122			
SATEC	Sensor for Detecting Spacer Blocks					303 / 11 953
WIND INVEST	Research on Methods for Suppressing Wind Turbine Reflections in Meteorological Radar Systems			500 / 19 724		
Rail-Com Systems	Analysis and Design of Infrastructure Antennas		40 / 1 578			
University of Žilina (Slovak Republic)	New Methods for Calculating Railway Operational Intervals	49 / 1 933				
University of Žilina (Slovak Republic)	Research and Development in Consulting, Expert Assessments of Proposed Solutions and Models for Core Railway Infrastructure			51 / 2 012		
University of Žilina (Slovak Republic)	Research and Development in Consulting, Expert Assessments of Proposed Solutions and Models, and Support for the Preparation of Professional Publications in Core Railway Infrastructure Systems				49 / 1 933	
Rieter CZ	System for Determining the Degree of Contamination of a Rotating Comb – Phase 1	152 / 5 996				
AŽD Praha	Analysis of Technical Possibilities for Train Integrity Monitoring – Phase 1	263 / 10 375				
Rieter CZ	System for Determining the Degree of Contamination of a Rotating Comb Surface – Phase 2	250 / 9 862				
TopolWater	Software for Wastewater Treatment Plant Control Room					498 / 19 645
Total		1 511 / 59 606	398 / 15 700	551 / 21 736	49 / 1 933	801 / 31 598

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:

Primary Radar Sensor Antenna with Polarimetric Measurement Support

The active antenna system consists of two subsystems. The transmitting antenna subsystem is designed to emit signals for the detection, localisation, and classification of targets based on their polarimetric parameters. The receiving antenna subsystem receives signals reflected from radar targets. Each subsystem comprises a system of mutually perpendicular arrays of Vivaldi antenna elements. The uniqueness of this design lies in its symmetrical cross-aligned configuration of Vivaldi antenna elements, which enables simultaneous transmission and reception in two orthogonal linear polarisations with their antenna radiation patterns. The achievement of the desired antenna radiation pattern is ensured by planar signal distribution networks for elevation and azimuth, based on microstrip transmission lines. In this novel antenna type, target classification and clutter suppression are based on polarimetric radar measurements. This development was part of the project Research and Development of an Active Antenna System for the Detection of Targets with the Support of Measuring Polarimetric Parameters, carried out between 1 June 2021 and 31 May 2023.

The antenna system is fully integrable into radar systems designed for the detection, localisation, and classification of small fluctuating targets, such as drones and other unmanned aerial vehicles (UAVs). It is particularly useful in the protection of critical infrastructure, including airports, power plants, military and government buildings, as well as in battlefield perimeter security. The primary end users are companies specialising in the integration of antenna systems for detection and radar devices.

This antenna system is a key component of a modern radar system developed under the project PROSPEKTOR II – Research and Development of a Next-Generation Radar Sensor Based on a Polarimetric Active Antenna System. This project, conducted in collaboration with the industrial partner ELDIS Pardubice, focuses on the development of the next generation of radar sensors. The system is expected to be utilised by various security and defence institutions, including the Army, Police forces, private security agencies, and the National Security Authority.

Gender dimension: This technology does not incorporate gender considerations, as it is purely a technical solution.

Methodology for GNSS-Based Localisation Systems

This methodology defines the legislative and technical prerequisites for implementing GNSS-based localisation methods on the Czech railway network and for the subsequent certification of train

²⁹ See Terms definition.

locator devices in non-safety-critical applications. While train locators require reliable and secure signal reception to function properly, they are not classified as safety devices or their subsystems.

The methodology, which takes into account railway environmental factors, serves as a guideline for certifying new GNSS-based localisation systems. Certification will be required for the deployment of new solutions by industry partners, who will use this methodology as a reference for understanding certification requirements and procedures.

For this methodology, the availability of GNSS signals was verified using experimental equipment that meets the requirements of the railway environment. The verification of signal availability – through experimental measurements or simulations – is an integral part of the certification process and a prerequisite for deploying train locators on specific railway tracks.

The methodology also includes a proposal for integrating GNSS functionalities into railway signalling systems. This section of the methodology is provided solely to offer a broader perspective on additional certification steps necessary for ensuring interoperability and integration with approved railway signalling system components, including ETCS (European Train Control System) as part of ERTMS.

The methodology presents two approaches to certifying GNSS-based devices, supplemented by graphical representations that illustrate the interconnections between manufacturing, assessment, and approval processes: a) A national solution, in which certification is carried out under the category of Dedicated Technical Equipment. b) An interoperable solution, based on anticipated approvals of new or revised regulations.

This methodology was developed under a contract with the Ministry of Transport within a TACR project managed by the GNSS Centre of Excellence. FEEI, AŽD Praha and the Railway Research Institute, participated as co-researchers in the development of the methodology.

Gender dimension: This technology does not incorporate gender considerations, as it is purely a technical solution.

Taste Examination Tester, Test Kit Including This Tester, and Data Collection System for the Test Kit

The tester represents an innovative solution for evaluating sensory taste perception. The system comprises a taste examination tester, which analyses individual responses to different taste stimuli, and a test kit that includes a data collection and analysis application. The tester utilises unique taste strips capable of transmitting taste sensations to various areas of the tongue and oral cavity, allowing for the measurement of local taste perception based on the specific part of the organ. The collected data is automatically transmitted to a software platform, which processes, analyses, and visualises the results.

This technology is designed for a broad range of applications, from medical diagnostics to applications in the food industry.

Medical Applications: The tester is used to identify taste disorders in patients with neurological or endocrine conditions. The results assist doctors in diagnosing conditions such as taste loss following viral infections (e.g. COVID-19), metabolic disorders affecting taste perception, and post-operative complications following facial nerve surgery.

Applications in the Food Industry: The technology can contribute to optimising product formulations and gaining a better understanding of consumer preferences.

The test kit is designed for remote examinations, enabling measurements to be conducted in the comfort of the patient's or customer's environment, making it particularly suitable for telemedicine applications. Currently, the technology is actively used by Pardubice hospital and its partners.

From a sustainability perspective, the system incorporates modern recyclable materials and supports the reuse of certain components, contributing to environmental sustainability.

Gender dimension: The research associated with this technology has taken into account potential differences in taste perception across various demographic groups, including gender aspects. This approach allows for more precise analysis and personalised methods in studying taste preferences.

Sensor for Detecting Layering Bricks

This technology involves the development of a sensor capable of detecting layering bricks used for packaging and stabilising products on pallets. Equipped with an advanced machine vision system, the sensor employs deep learning methods for precise detection, even when the blocks are partially obscured or damaged. This enables real-time operation in demanding industrial environments where standard optical sensors fail. The system features a software algorithm for processing image data, identifying relevant objects, and enabling their classification.

With broad applications in industrial automation, particularly in logistics and warehouse management, this technology enhances efficiency in handling goods and components. By reducing the need for manual inspection, it accelerates production processes, lowers operational costs, and improves workplace safety.

This technology was awarded first place in the Technology Day Innovation Project Competition at the University of Pardubice and first place in the Innovation of the Pardubice County Competition.

Gender dimension: This technology does not incorporate gender considerations, as it is purely a technical solution.

Automated Weld Inspection System

The system is designed for automated weld inspection, utilising advanced machine vision methods and neural networks to detect and classify defects in welded joints. It is equipped with a sensor module for image data acquisition, a classification and control unit implementing convolutional neural network architectures, and a supervisory control system.

The system adapts to the quality of acquired images by leveraging different neural network architectures with varying computational demands. This enhances the flexibility and efficiency of defect detection. The technology also includes an operator interface that allows manual intervention in image classification and adjustment of confidence levels when assigning images to specific defect categories. This improves accuracy and reduces false positive detections.

This system is particularly crucial in manufacturing industries, where weld quality directly affects the safety and durability of products such as pressure vessels, steel structures, and vehicles. Automating the weld inspection process significantly reduces inspection time, lowers operational costs, and improves production quality. By eliminating manual inspection, the technology not only accelerates the process but also minimises human error.

The implementation of this technology enhances efficiency, reducing the number of defective products entering distribution and leading to direct cost savings for manufacturers. Additionally, the system is designed with modularity and scalability in mind, allowing for seamless integration

into existing production lines. The optimised image processing algorithms lower energy consumption, contributing to environmental sustainability.

This technology has been successfully commercialised through a licensing agreement with K2 Machine.

Gender dimension: This technology does not incorporate gender considerations, as it is purely a technical solution.

FareOn NextGen – Person Movement Detection Algorithm

FareOn NextGen is based on an advanced algorithm for detecting human movement in public transport environments. The algorithm consists of three key components: person detection, movement tracking, and real-time passenger counting. The technology achieves high accuracy by employing computer vision and artificial intelligence techniques, while limiting detection to passengers' head tops only. This approach minimises legal risks associated with personal data protection, as it does not process full-body images or facial features.

FareOn NextGen is primarily used for optimising public transport operations and improving passenger comfort. Public transport operators can obtain precise data on vehicle occupancy, allowing them to optimise capacity and enhance operational efficiency. Additionally, the algorithm is applicable in security and crowd monitoring in locations such as airport terminals, railway stations, and shopping centres.

The deployment of this technology reduces operational costs for transport companies by improving timetable planning and vehicle utilisation. The system utilises cost-effective surveillance cameras, reducing hardware costs and enabling easy integration into existing systems. Optimised algorithms also reduce the energy consumption of data processing, contributing to the technology's sustainability and reducing environmental impact. The technology is implemented by Mikroelektronika.

Gender dimension: While gender aspects are not directly relevant to the application of this technology, balanced gender representation was considered during the development of training and validation datasets to ensure accuracy across different demographic groups.

Antenna System with Cross-Beam Design for Detecting Small Flying Objects

This utility model provides a technical solution for an antenna system with a cross-beam configuration, designed to detect small flying objects, such as drones. It enables rapid information updates across the entire monitored area, while providing sufficient time for reliable target classification and detection with high-precision positioning of detected objects. The system consists of two antennas: a transmitting antenna, which scans the sector with narrow beams in elevation and full azimuthal width coverage, and a receiving antenna, which is multi-beam and covers the monitored sector simultaneously with narrow azimuthal beams and a cosecant-shaped elevation pattern. This configuration allows longer data collection times from individual sub-sectors without increasing the overall update time. This enhances the reliability and accuracy of detecting and identifying small, slow-moving objects, even in complex environments with obstacles and other moving objects.

The detection and localisation of small unmanned aerial vehicles (UAVs) is an increasing priority for leading global radar system manufacturers. The key challenge for all drone-tracking radars is to enable fast and reliable detection within a designated area while ensuring precise positioning and trajectory analysis. This technical solution introduces an innovative antenna system concept

and search method, significantly reducing the time required for reliable target detection and classification. With its unique approach, this solution offers substantial potential for enhancing safety and security in critical infrastructure, both nationally and internationally.

Gender dimension: This technology does not incorporate gender considerations, as it is purely a technical solution.

System for Measuring Radar Signal Reflections from Wind Turbines

This utility model represents a technical solution for a system designed to measure radar signal reflections from wind turbines. The system is intended for evaluating the impact of wind turbines on pulse radar systems. The increasing number and size of wind turbines present significant challenges for radar systems, as wind turbines can limit or even completely disrupt their detection capabilities within the affected perimeter. The developed measurement system is capable of efficiently, cost-effectively, and rapidly assessing the adverse effects of wind turbines on virtually any pulse primary radar system by measuring the reflected signals. These signals are processed within the system and used to generate a simulation model of the wind turbine's impact on the specific radar system.

The system consists of two main components: a measurement device, which transmits high-frequency signals and receives reflections from surrounding objects, including wind turbines, and a reference reflector, which is used to calibrate the effective radar cross-section (RCS) measurement of individual parts of the wind turbine. The reference reflector, with a defined RCS, is positioned at an appropriate location to calibrate the entire measurement chain. The antenna platform can be rotated both horizontally and vertically and locked into place at any position. A video camera records the movement of the wind turbine blades, storing footage via a data channel in a recording system to determine blade rotation speed and blade axis orientation relative to the measurement device's antennas.

This concept significantly reduces the number of required measurements, which are often difficult or impossible due to the remote locations of wind farms. The proposed system is suitable for radars ensuring air or maritime traffic safety, meteorological radars, airspace protection radars, research and development of new methods to mitigate wind turbine interference with radar systems, as well as testing radar resilience to interference from wind turbines.

Gender aspects are entirely irrelevant to this utility model, as it is purely a technical application.

Control and Evaluation Unit with Measurement of Basic Gearbox Diagnostic Parameters

This online monitoring unit for gearbox condition assessment processes data from various types of sensors, including torque, acoustic emission, and oil quality sensors, with automatic evaluation functionality.

The control unit consists of two main components: the IOLINKMASTER Board, which functions as a power bridge for four IO-Link sensors using a UART serial interface, and the BOARDZERO Board, which provides eight digital inputs and eight digital outputs operating at HTL levels, real-time clock functionality, UART and SPI interface compatibility, and support for RS-485 sensors and control units. The microprocessor control unit is connected via a serial port with galvanic isolation using optocouplers. The microprocessor allows the processing of extensive datasets, including those from acoustic emission measurements. The unit supports the installation of MATLAB Runtime, enabling the execution of sophisticated neural network-based evaluation algorithms compiled in MATLAB.

This technology has broad industrial applications, particularly in sectors where online monitoring and diagnostics of rotating and vibrating gearbox components are essential, including the manufacturing and engineering industries, transportation and logistics, and the construction sector. Since 2024, this solution has been commercialised through the sale of fully assembled functional units.

Gender aspects are irrelevant to this utility model, as it is purely a technical application.

Development of Technology for Intelligent Management of Goods Transport Flows – Part II: Optimisation and Expansion

This project resulted in the development of a new logistics software product with advanced functionalities that enhance its competitiveness. The software was successfully validated in a large logistics company, confirming its effectiveness.

At the core of this software is an optimisation algorithm library designed to plan the distribution and collection of goods in designated transport units based on received orders. These orders are processed from the point of dispatch to the destination, with the possibility of transshipment at regional depots using predefined vehicles. The Hub and Spoke model is applied in the transport planning process. The system accommodates three temperature regimes – dry goods, chilled goods, and frozen goods – which can be combined on authorised vehicles. The algorithm's key functions include 2D cargo loading optimisation, considering stackability constraints, optimisation of trailer coupling and decoupling, compliance with AETR regulations on driver working hours, and cost minimisation related to transport, loading and unloading, transshipment, and vehicle waiting times. The optimisation algorithm library is an integral part of the PLANTOUR system, which provides a web-based interface for data input and visualisation of algorithm outputs. The software library integration was carried out by DIGITECH ČR.

The verified technology refers to a comprehensive logistics system based on this software, successfully tested in a large logistics enterprise – MD logistika. The deployment of this technology in a logistics company reduces distribution costs, lowers CO₂ emissions – enhancing environmental sustainability – and improves the company's overall competitiveness.

This technology does not involve specific drivers but rather operates at the vehicle level. Therefore, there are no gender-related restrictions, and its application in logistics is gender-neutral.

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

Type of result ³⁰	Year of application	Name
Software	2023	FareOn NextGen – Person Movement Detection Algorithm
Utility Model	2020	Automated Weld Inspection System
Utility Model	2022	Taste Examination Tester, Test Kit Including This Tester, and Data Collection System for the Test Kit
Functional Sample	2023	Sensor for Detecting Layering Bricks
Utility Model	2022	System for Measuring Radar Signal Reflections from Wind Turbines
Utility Model	2023	Primary Radar Sensor Antenna with Polarimetric Measurement Support
Methodology	2023	Methodology for GNSS-Based Localisation Systems
Verified Technology	2023	Development of Technology for Intelligent Management of Goods Transport Flows – Part II: Optimisation and Expansion
Utility Model	2019	Antenna System with Cross-Beam Design for Detecting Small Flying Objects
Functional Sample	2021	Control and Evaluation Unit with Measurement of Basic Gearbox Diagnostic Parameters

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:

FEEI places strong emphasis on close collaboration with industry, with the transfer of research results into practice occurring primarily through joint research projects with industrial partners. The faculty's strategy does not primarily focus on developing commercial products but rather on producing high-quality scientific and research outputs, which naturally find applications in real-world settings through collaborative projects. Commercialisation may arise as a secondary effect of this cooperation, as companies utilise the know-how gained through joint research.

In addition to project activities, FEEI uses knowledge and technology transfer mainly through contract research and the sale or licensing of intellectual property. However, given the faculty's research strategy, these activities remain supplementary, and revenues from licensing are negligible compared to other sources of income.

Technology transfer is primarily carried out in collaboration with the Centre for Technology and Knowledge Transfer (CTKT)^[1], a central university unit responsible for managing industry inquiries related to research and development, identifying scientific partners for joint research, negotiating collaboration terms, and providing systematic support for technology transfer. Additionally, CTKT oversees the management of industrial property, offering comprehensive services related to intellectual and industrial property protection.

To strengthen cooperation between CTKT and industry, FEEI has established the position of a Technology Transfer Ambassador. This role involves actively identifying opportunities for technology transfer, coordinating the activities of academic staff engaged in technology transfer, and participating in negotiations with industry partners. This system also supports proof-of-concept projects^[2] funded by the Technology Agency of the Czech Republic (TACR), aimed at preparing research outputs for practical applications. During the reporting period, the faculty implemented the following proof-of-concept projects: *Universal Programmable Image Sensor* and *Smart System for Automated Weld Quality Evaluation*. New project applications are submitted for evaluation.

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.

To engage new industry users, FEEI presents its technologies via technology databases (e.g. Technology overview [Transfera.cz](https://transfera.cz)), the faculty's website, and technology fairs and conferences. However, the most effective approach remains direct communication with potential partners, based on an established network of industry collaborations.

Frequent Industry Users of FEEI Research Outputs

ELDIS Pardubice focuses primarily on the development and production of radar technology and air traffic control systems, continuing the long-standing tradition in radar and microwave technology. The company's highly experienced team of specialists conducts system analyses, feasibility studies, project management, circuit and software development, mechanical engineering, as well as functional testing and system integration. ELDIS products are supplied to over 25 countries worldwide, including the Czech Republic. FEEI has collaborated with ELDIS more than 15 years, jointly defining research topics and implementing R&D projects. Since 2021, the faculty has been engaged in an application project funded under OP PIK, which is now being further developed in a TACR-funded follow-up project to create a next-generation radar sensor based on a polarimetric active antenna system.

RETIA founded in 1993 in Pardubice, continues the legacy of Tesla Pardubice, one of the largest European radar manufacturers of the 20th century. The company specialises in the development and modernisation of radar systems, command and control systems, ultra-wideband (UWB) localisation and communication systems, as well as ReDAT recording systems for voice, screen, and data processing. RETIA products are used in both military and civilian applications. The company has a strong in-house research capacity, delivering major projects for clients in the Czech Republic and abroad. FEEI collaborated with RETIA to develop a software radar simulator concept, enabling modelling of radar transmitter and receiver subsystems and simulating signal propagation and target characteristics. Research and validation of the radar simulator are being conducted with the support of a mutual project with a research plan, which was approved in 2023. The simulator provides functions for verifying the operation of radar systems as a whole or in individual components, significantly accelerating the development of new hardware components and signal processing algorithms.

Mikroelektronika is a leading manufacturer of fare collection and monitoring systems for public transport, serving clients worldwide. The company also develops and manufactures electronic components and systems for automotive, energy, and communications industries. FEEI has been collaborating with Mikroelektronika on joint research and development activities, culminating in the project Cooperation between the University of Pardubice and Industry in Applied Research of Positioning, Detection, and Simulation Systems. The unique set of algorithms developed during this project for passenger and object detection was later applied in a Ministry of Industry and Trade-funded application project, leading to two software solutions that Mikroelektronika subsequently commercialised within its FareOn product line.

AŽD Praha is a major supplier of signalling, control, and communication systems for transport infrastructure, specialising in railway transport. The company develops, manufactures, and integrates railway signalling and control technologies and provides research, development, and maintenance in railway, road telematics, telecommunications, and subway control systems. FEEI has conducted contract research for AŽD, including the development of new antenna elements and the experimental verification of signal propagation between collaborating Intelligent Transportation System (ITS) components within the European C-Roads project. As part of a TACR-funded project, FEEI carried out research to verify the integrity of GNSS and EGNOS signals, supporting the implementation of virtual balises as an additional component of the European Rail Traffic Management System (ERTMS). Experimental studies and field tests on Railway Test Centre led to the definition of methodologies for testing GNSS signal availability on both corridor and

regional railway lines. These methodologies were certified by the Ministry of Transport of the Czech Republic, ensuring compliance with European Commission regulations for railway signalling systems. The project outputs enable the deployment of new safety technologies on Czech railway lines, increasing Safety Integrity Level up to SIL4.

Wikov MGI is a traditional engineering company specialising in the manufacture of gears and mechanical gearboxes. The company integrates latest technologies and inter-disciplinary research into its design and production processes. FEEI collaborated with Wikov to develop and experimentally validate prototype units for gearbox monitoring and diagnostics and the creation of a converter for acoustic emission measurement for an online monitoring system. Since 2024, these units have been commercially integrated into Wikov's industrial product line. The technology supports online monitoring and diagnostics of rotating and vibrating mechanical components, with applications in manufacturing and the engineering sector.

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
Device and Method for Evaluating Weld Quality				35 / 1 381	
Transfer of Proprietary Rights and Licensing – FareOn NextGen (Research and Development of the Next Generation of the Intelligent FareOn NextGen Control System)					50 / 1 972
Total					

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.

HTML links to additional documentation:

[1] <https://www.upce.cz/en/ctkt/about-us>

[2] <https://www.upce.cz/en/proof-of-concept-projects>

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:

FEEI has been continuously expanding its educational programme to increase young people's interest in technical disciplines, encourage enrolment in technology-focused degree programmes, and promote career opportunities for secondary school and university graduates in fields supported by the faculty. This initiative is carried out in collaboration with industrial enterprises, organisations, and associations that actively contribute to the promotion of polytechnic disciplines at various levels of education.

The FEEI science and technology outreach programme focuses on research, engineering, and the scientific activities of individual researchers, small teams, and larger research groups. The primary target audience consists of high school, grammar school, and university students (I). Additional target groups include secondary school (II), the general public (III), the professional community (IV), and FEEI's national and international partners (V). FEEI engages with these audiences through direct events, its website, and social media platforms.

I) Youth, High School and Grammar School Students, University Students

The primary target group consists of high school, grammar school, and university students. To engage these students, FEEI has developed a comprehensive programme featuring direct interaction through excursions, workshops, industry collaboration events, FEEI open days, and support for competitions and extracurricular activities. These initiatives offer interactive demonstrations showcasing the practical applications of R&D results in FEEI disciplines, including electronic systems, informatics, and automation. Activities are tailored to specific schools or interest-based courses. Key activities for this target group include: (1) Excursions to FEEI for students of high school, (2) FEEI Open Days, (3) Excursions to partner companies, (4) Active participation in evaluation committees for regional and national student competitions, (5) Workshops with industry partners, including competitions for secondary school and high school students, (6) University-wide events promoting science and education.

II) Secondary School

FEEI collaborates with secondary schools, educational outreach centres, and extracurricular activity organisations to engage primary school pupils. Example initiatives include: (7) Competitions for secondary school students in IT, electronics, and robotics, (8) Support for extracurricular educational activities focused on mentioned disciplines.

III) Public Engagement

FEEI participates in university-wide public engagement initiatives in cooperation with other faculties and university departments. These multi-disciplinary events promote all university faculties and showcase activities of various associations and lower-level educational institutions. The goal is to reach the widest possible audience within the general public. FEEI actively contributes to events such as (9) European Researchers' Night, Sports Park, and the Science and Technology Fair.

IV) Engagement with the Professional Community

FEEI actively promotes its R&D&I activities and results within the professional community by advancing key topics in progressive fields of electrical engineering and informatics, which align with the Regional Innovation Strategy (RIS3) of the Pardubice Region.

The dissemination of research outputs is further supported by FEEI staff through:

- Participation in technical conference committees
- Hosting seminars
- Offering lifelong learning courses
- Engaging in discussion platforms
- Collaborating with the P-PINK Business Incubator
- Utilising the Technology Transfer Centre of the University of Pardubice

Examples of professional engagement include: (10) Regional Innovation Strategy (RIS3) Platforms, the Regional Innovation Council, Active Membership in P-PINK, and FEEI Alumni Networking Events.

(V) Engagement with National and International Partners

FEEI promotes its research infrastructure and activities to representatives of foreign institutions to strengthen international collaboration. Visiting researchers are introduced to R&D topics, ongoing projects, and joint research outputs with international partners. Additionally, FEEI organises seminars and workshops to disseminate collaborative research results.

Selected Examples of In-Person Events and Activities in R&D&I Popularisation and Public Engagement in the Evaluation Period 2019–2023

(1) Excursions for High School Students at FEEI

FEEI actively collaborates with high schools, offering students the opportunity to visit the faculty through organised excursions. These visits are designed to introduce students to technical fields and inspire them to pursue further education in disciplines that are considered key to the future.

As part of the programme, students attend motivational lectures on both specialised and popular science topics, covering fields such as information technology, electrical engineering, electronic systems, and automation. The topics are selected to engage students, demonstrate real-world applications of technologies, and introduce them to potential career paths.

The excursions also include a tour of the faculty, featuring specialised departments and state-of-the-art laboratories. This allows students to experience first-hand how theoretical knowledge is applied in practice and how cutting-edge technologies are integrated into education and research.

The primary objective is to encourage students to pursue technical fields and to introduce them to the opportunities available at FEEI. By fostering interest in science and technology at the high school level, FEEI contributes to the development of future experts in these fields.

Frequency: Typically held five times a year

(2) FEEI Open Days

The Open Day at FEEI serves as an ideal opportunity for prospective students interested in technical disciplines to explore the faculty and its study programmes.

The event begins with a general introduction in a lecture hall, where attendees receive detailed information about the faculty, its study opportunities, and student life. Current students share their experiences and provide valuable advice, offering prospective students first-hand insights into life at the faculty. A dedicated Q&A session allows participants to ask questions about their future studies.

The central part of the event features a tour of specialised classrooms and laboratories, where faculty staff and students present interactive demonstrations of teaching and research activities.

Throughout the day, attendees can engage with so-called navigators – current FEEI students – who provide first-hand information about study programmes and student life. Promotional materials and detailed study information are also available at designated stands.

A virtual Open Day is accessible via the web platform dod.fei.upce.cz, offering a wide range of engaging and useful information. This includes a virtual faculty tour, video presentations from laboratories, alumni meetings, and other materials providing insights into studying at FEEI.

Frequency: Typically held in January, once a year

(3) Excursions to Partner Companies

Students across all years of study participate in company excursions as part of their academic curriculum. These excursions provide valuable industry exposure, allowing students to explore real-world applications of their studies.

For IT-oriented students, excursions primarily involve companies engaged in software development, computer network design and maintenance, and information systems development.

For electrical engineering students, visits are organised to companies specialising in communication, localisation, and radar systems.

For automation students, excursions take place in manufacturing and development enterprises, where they gain insights into production processes and the applications of information, control, and robotic systems.

For undergraduate students, these excursions tend to be general in nature, providing a broad overview of industry practices. In contrast, postgraduate students attend thematically focused visits, specifically tailored to their study programme or individual courses.

Frequency: Typically held ten times a year

(4) Active Participation in evaluation committees for Regional and National Competitions

FEEI actively supports secondary school and university students in engaging with R&D competitions and technical projects, encouraging their participation in research, innovation, and applied technology development.

Academic staff from FEEI serve as judges in regional rounds of the Secondary School Professional Activities competition. This prestigious competition involves students presenting individual or group projects, which they defend before a panel. Many student projects build upon their final-year assignments, with FEEI providing expert evaluation and mentoring in fields such as informatics, electrical engineering, and physics. Faculty members also participate in national-level evaluations.

The Student Creative and Professional Activities competition is open to both undergraduate and postgraduate students. Unlike other competitions, it is not limited to technical university students but is also open to secondary school students interested in cybernetics, automation, electronics, programming, and applied informatics. The competition is financially and organisationally supported by industry partners.

FEEI also collaborates with the Association for Youth, Science, and Technology (AMAVET) in organising the EXPO SCIENCE AMAVET competition for secondary school students. This initiative encourages students to undertake scientific and technical projects, helps identify talented individuals in science and technology disciplines, facilitates access to state-of-the-art research facilities and laboratories.

Frequency: Typically held five times a year

(5) Company Workshops with Competitions for Secondary School students

FEEI actively participates in Career Days organised at secondary schools, providing a direct platform for showcasing the faculty's study programmes, research activities, and career opportunities to students interested in technical fields.

As part of these events, FEEI sets up an information stand, where students can learn about study options, including admission requirements, available programmes, and career prospects for graduates. The stand is typically staffed by current FEEI students, who offer firsthand insights and share personal experiences about their studies.

When conditions and space permit, the presentation includes live demonstrations of selected technologies or experiments, designed to inspire students and ignite their interest in technical disciplines. Many of these events also feature competitions for secondary school students, in which FEEI plays an active role in organisation and evaluation.

Through these activities, FEEI fosters early engagement with technology, encouraging students to explore technical fields and consider further education in engineering and applied sciences. Participation in Career Days is an essential tool for connecting with potential students, introducing them to modern technological advancements, and guiding them toward future careers in STEM-related fields.

Frequency: Typically held five times a year

(6) University-Wide Events for the Popularisation of Science and Education

FEEI regularly participates in organised outreach visits to secondary schools in collaboration with other faculties of the University of Pardubice. These events focus on interactive presentations of study opportunities and academic programmes available at FEEI.

Students are introduced to hands-on demonstrations of the technologies and disciplines taught at the faculty. A strong emphasis is placed on an engaging and entertaining approach, making science more accessible, interactive, and stimulating for students. These activities highlight that science is not only intellectually challenging but also fun, creative, and full of unexpected discoveries.

The primary objective of these visits is to inspire young people to pursue technical fields (in the case of FEEI) while demonstrating the practical applications of the knowledge they would acquire at the faculty. By engaging students in real-world technological applications, FEEI aims to support technical education and motivate the younger generation to consider careers in fields crucial to modern industry and innovation.

Frequency: Typically held five times a year

(7) Competitions for Secondary School Students in IT, Electronics, and Robotics

FEEI actively supports competitions organised by high schools for talented secondary school students. These competitions are sponsored by industry partners collaborating with FEEI in relevant fields, creating opportunities to engage a broad audience of young, talented individuals interested in technical education.

On competition days, FEEI staff and industry representatives deliver expert lectures for both secondary and high school students at the hosting high school. The faculty also plays an active role in evaluating competition results, working closely with high schools in the Pardubice region.

FEEI primarily supports competitions in informatics, electronics, and robotics. Together with industry partners, FEEI representatives present awards to primary school students in recognition of outstanding achievements in creative projects.

Frequency: Typically held three times a year

(8) Support for Extracurricular Educational Activities for Secondary School Students

Faculty staff, senior students, and alumni collaborate with SFÉRA, an educational centre, and the Houses of Children and Youth (DDM) in Pardubice, where they lead extracurricular activities in robotics, electrical engineering, artificial intelligence, programming, and 3D printing.

SFÉRA is an organisation dedicated to informal and extracurricular education, based in the creative district of the Automatic Mills in Pardubice. It provides a space for creativity, innovation, and discovering new connections. SFÉRA brings together experts from different fields and collaborates with partners, including FEEI, to foster both individual and community development. Its goal is to enhance existing learning and knowledge-sharing methods, with an impact on people within and beyond the region.

FEEI also supports extracurricular activities run by DDM, which are funded by the city of Pardubice. The faculty plays an active role in technical education activities related to robotics, programming, and electronics. Faculty students participate as instructors, while FEEI provides laboratory visits beyond the scope of standard educational activities, offering access to equipment not available at other educational centres.

Frequency: Support is provided throughout the year.

(9) University-Wide Events for the General Public – Researchers' Night, Sports Park, and the Science and Technology Fair

FEEI actively participates in Researchers' Night, an annual nationwide event that gives the general public a unique opportunity to explore the world of science and technology. Held at the University of Pardubice, this event features interactive workshops and hands-on demonstrations across various scientific and research disciplines.

Alongside other faculties of the University of Pardubice, FEEI also takes part in the Pardubice Sports Park, an open public event. At the designated university stand, FEEI students and academics share their experiences and demonstrate how technology influences both science and everyday life, including applications in sports and fitness.

Additionally, FEEI regularly participates in the Pardubice Science and Technology Fair, a public outreach initiative aimed at schools, students, and families with children. The fair presents scientific and technical disciplines in a fun and interactive format, helping to bring science, technology, and innovation closer to the public.

Frequency: Typically held three times a year

(10) RIS3 Expert Platforms

In collaboration with industry partners, FEEI actively promotes key research areas in radio and microwave technology, radar and localisation systems, artificial intelligence, control systems, automation, and sensor technology, positioning them as strategic priorities for the development of advanced industrial sectors. These research themes are then incorporated into the national RIS3 Strategy, aligning with broader innovation and industrial development policies.

With the support of the Pardubice Region, these priority topics are presented at professional events and workshops, attended by representatives from industry, academia, and research institutions who are engaged in advancing R&D&I in electrical engineering, informatics, and cybernetics.

Frequency: Typically held twice a year

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:

Based on the achieved results, participation in national, international, and bilateral projects and established collaboration with foreign partners since the faculty's founding, FEEI management has defined strategic research topics that have been developed since 2020. For research and project activities, international cooperation, and the university's third mission, the faculty has identified the key focus areas of **Detection, Localisation, Identification, and Classification**, which shape the direction of activities in electrical engineering, informatics, and cybernetics for applications in industry and the control of various scales of processes and infrastructures.

Given limited personnel capacities, discussions with senior staff regularly focus on opportunities for faculty members to engage in activities that lead to high-quality publications, commercially exploitable and licensable results, involvement of young researchers, creation of international consortia, and preparation of positions for foreign researchers. The effective use of personnel and infrastructure is further enhanced through cooperation with other faculties at UPCE and other universities in the Czech Republic.

Thanks to these strategic measures, FEEI has continued working on H2020 projects, participated in Horizon Europe project preparation, leveraged bilateral cooperation schemes to support student and faculty staff and researchers exchange programmes, and generated high-quality publications with international co-authors. The faculty has focused on the implementation of recommendations from the previous evaluation. The recommendation have been summarised into the following areas:

- **International Collaboration and Recognition in the Scientific Community**
- **Research Projects**
- **Support for Technology Transfer**
- **R&D&I Popularisation and Public Engagement**
- **Collaboration with Other Faculties**

Implementation of Recommendations for Module 3

During the evaluation period, FEEI has focused on strengthening its position in applied research projects through collaboration with industrial enterprises. Significant efforts have been made to enhance international partnerships to foster joint research with major European and non-European institutions. These collaborations have resulted in numerous high-quality publications and the preparation of project proposals. Compared to previous years, FEEI researchers have become more actively engaged in the scientific community. The faculty, together with the University's Centre for Technology and Knowledge Transfer (CTKT), follows a strategic approach to identifying collaboration opportunities, securing project funding, and protecting intellectual property. A brief assessment of the implementation of recommendations follows the structure of previous evaluations and complements the findings discussed in Chapters 3.1 to 3.6.

International Collaboration and Recognition in the Scientific Community

FEEI continues to integrate R&D&I activities with education and selectively establishes long-term partnerships with institutions that contribute to achieving high-quality research outputs. Collaborations with international partners primarily focus on co-authored publications with results applicable to further industrial collaborations. Scientific recognition and international prestige are demonstrated through the active involvement of FEEI researchers in technical and review committees of international conferences, editorial boards, and the evaluation of international research projects.

The faculty has seen a growing number of faculty members who are active in IEEE technical sections, contribute to shaping conference topics, and participate in organising new editions of international conferences. FEEI is also involved in hosting high-quality scientific conferences aligned with its research focus. Faculty members regularly deliver invited lectures at foreign institutions and receive international awards for their long-term contributions. Selected activities are detailed in Chapter 3.2.

Research Projects

FEEI continues to expand its portfolio of research projects, emphasising participation in international consortia and securing funding for high-quality research outcomes. The faculty actively supports bilateral exchange programmes with partner institutions within and beyond the EU, fostering joint research outputs, international projects, co-supervision of PhD students, and recruitment of international researchers.

A bilateral research project with the Indian Institute of Technology Guwahati was successfully completed. The faculty's research projects are highly interdisciplinary, with applications in transport, materials science, biomedicine, and chemistry. Insights gained from international collaboration have helped FEEI maintain a strong portfolio of national applied research projects, particularly in cooperation with globally recognised industrial partners.

FEEI has continued its participation in H2020 projects, prepared Horizon Europe project proposals, and, since 2024, has been involved in a new project focused on virtualised testing for the certification of EGNSS train positioning systems. The strategically defined research areas of Detection, Localisation, Identification, and Classification have been incorporated into an OP JAK project proposal worth EUR 3 million, which has been recommended for funding from 2024. These research areas form a core part of education, research, and international collaboration at FEEI.

The number and scope of research projects are constrained by the limited number of academic staff, who must also fulfil teaching responsibilities across three fields of study and at all levels of education. A selection of research projects carried out during the evaluation period is presented in Chapter 3.3.

Support for Technology Transfer

Technology transfer and intellectual property protection are managed in collaboration with the University's Centre for Technology and Knowledge Transfer (CTKT), which operates under the strategic leadership of the Vice-Rector for Research and Creative Activities. Where applicable, FEEI directly involves technology transfer specialists in projects with commercialisation potential. The faculty's Development and Project Support Office systematically cooperates with the University's legal and financial departments to prepare cooperation agreements and manage project contracts.

FEEI prioritises engagement in strategic, long-term research projects that generate high-impact results. Contract research is pursued only when the expected outcomes lead to commercialisation and when faculty members have the capacity to participate in such projects. Given the limited number of researchers and an average 30% workload allocation for projects, contract research has

not been a priority in recent years. The transfer of research results into practice is further discussed in Chapter 3.5, with specific research outcomes presented in Chapter 3.4.

R&D&I Popularisation and Public Engagement

FEEI's outreach efforts target multiple audience groups, with a particular focus on younger generations. Key target groups include high schools and secondary schools, the general public, the scientific community, industrial partners in the Czech Republic and abroad, and foreign universities. Further details on these activities are provided in Chapter 3.6.

Collaboration with Other Faculties

FEEI systematically engages in collaborative research and educational activities with other faculties. In interdisciplinary projects, FEEI management coordinates joint research initiatives, ensuring that collaboration enhances project success rates and enables research teams to achieve high-quality results. Once agreements between faculties are in place, dedicated research teams are assigned to develop project proposals. Since 2018, FEEI has collaborated with other faculties on project submissions and implementations within the OP VVV, OP JAK, OP PIK, and TACR funding schemes.

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)
FEEI UPCE Website	3.1	https://fei.upce.cz/en
Statutes of FEEI UPCE	3.1	https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M3%20Faculty%20of%20Electrical%20Engineering%20and%20Informatics
Excellent Scientific Teams of FEEI	3.2	https://fei.upce.cz/en/fei/research-team-of-petr-dolezel https://fei.upce.cz/en/fei/research-team-of-tomas-zalabsky https://fei.upce.cz/en/research-team-of-tomas-brandejsky
IEEE Senior Member	3.2	https://ieeexplore.ieee.org/author/37397284000
IEEE Senior Member	3.2	https://ieeexplore.ieee.org/author/37072639500
Galileo Masters Award	3.2	https://fei.upce.cz/en/university-of-pardubice-receives-galileo-masters-prize-2020
Radio Technical Commission for Maritime Services (RTCM)	3.2	https://www.rtcn.org/committees
Frontiers in Big Data – Editorial Board	3.2	https://loop.frontiersin.org/people/2140949/overview
Frontiers in Artificial Intelligence – Editorial Board	3.2	https://loop.frontiersin.org/people/2140949/overview
Research in Statistics – Editorial Board	3.2	https://www.tandfonline.com/journals/urst20/about-this-journal#journal-metrics
Journal of Advanced Transportation – Special Issue Editorial Board	3.2	https://onlinelibrary.wiley.com/doi/toc/10.1155/1409.si.635010
Electronics – Special Issue Editorial Board	3.2	https://www.mdpi.com/journal/electronics/special_issues/Visual_Decision
Cooperation in Applied Research between the University of Pardubice and Industry in the Field of Positioning, Detection, and Simulation Technology for Transport Systems (PosiTrans)	3.3	https://starfos.tacr.cz/en/projekty/EF17_049%2F0008394?query=46vqaadgy3aq
Development of Contactless Technology for Smart Perimeter Protection	3.3	https://starfos.tacr.cz/en/projekty/LTAIN19100
SmartRail – Automated Data Analysis Related to Rail Freight Transport	3.3	https://starfos.tacr.cz/en/projekty/CK04000041?query=zpxaaac6uysa#project-main
Development of Conditions for Deploying GNSS-Based Train Locators on the Railway Network	3.3	https://starfos.tacr.cz/en/projekty/TIRSM707?query=ygnaaadhcmqa
System Suitability Study for Train Positioning Using GNSS in ERTMS (2020)	3.3	https://navisp.esa.int/project/details/40/show
Next-Generation AI-Based Online Monitoring for Gearbox Diagnostics	3.3	https://starfos.tacr.cz/en/projekty/FW03010244?query=yxxaaac733jq
The C-Roads Platform	3.3	https://www.c-roads.eu/platform.html
Research and Development of an Active Antenna System for Target Detection with Polarimetric Measurement Support	3.3	https://starfos.tacr.cz/en/projekty/EG20_321%2F0024570?query=r2xiaadapuaa#project-main
EGNSS High-Integrity Layer for Multimodal Green Transport (HELMET)	3.3	https://www.helmet-project.eu/

Research and Development of the Next Generation of the FareOn NextGen Intelligent System	3.3	https://starfos.tacr.cz/en/projekty/EG20_321%2F0024668
Centre for Technology and Knowledge Transfer	3.5	https://www.upce.cz/en/ctkt/about-us
Proof-of-Concept Projects	3.5	https://www.upce.cz/en/proof-of-concept-projects

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: Faculty of Health Studies (FHS)

FORD: 3 - Medical and health 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 Health Studies (FHS)** is a young and dynamic institution within the Czech Republic's higher education and research landscape. Established on 1 January 2007 through the transformation of a higher education institute with a five-year history, the faculty currently enrolls approximately 1,000 students in non-medical healthcare disciplines. Alongside with its educational activities, FHS has been actively expanding its research and development (R&D) efforts.

The mission and vision of the faculty are aligned with the **Strategic Plan of the Faculty of Health Studies at the University of Pardubice**. Its primary mission and societal contribution lie in providing high-quality undergraduate, postgraduate, and lifelong education for healthcare professionals. Our study programmes – whether qualification-based for regulated professions or specialisation-oriented – are of high societal importance and play a crucial role in the provision of healthcare services.

Beyond its own study programmes and lifelong learning courses, the faculty's academic staff (AS) also organise educational courses for the general public, schools, and citizens. These activities are conducted at the **Centre for Health Care (CePeZ)**^[2], which has been an integral part of the faculty since 2018. In addition to its educational role, CePeZ plays a significant role in disseminating research findings and engaging with the public. Alongside its commitment to education, the faculty's long-term mission is to support high-quality and internationally recognised research (see **Implementation of the Strategic Plan**^[1]).

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

The faculty's contributions in the area of R&D take three main forms:

- a) **Advancing knowledge**, primarily serving other researchers and professionals in practice, both nationally and internationally, through the publication of research findings in high-impact academic journals.
- b) **High societal relevance**, as research findings are implemented into practice among healthcare professionals providing medical, social, and other specialised care. These results may also serve public administration institutions, professional organisations, or care providers.
- c) **Direct societal impact on healthy and ill individuals**, who can benefit from new or improved diagnostic, supportive, or preventive procedures.

In terms of R&D capacity, the faculty is small to medium in size compared to other faculties with the same focus in the Czech Republic. Nevertheless, the faculty's long-term ambition is to conduct effective interdisciplinary research, often linking healthcare professionals with varying qualifications and researchers from other fields, such as chemistry, biology, computer science, pedagogy, psychology, and ethics. The faculty's R&D activities focus on two main **FORD** research areas – **3.3 Health Sciences** (particularly subfields 30307 Nursing, 30308 Nutrition and Dietetics, and 30311 Medical Ethics) and **3.2 Clinical Medicine**. Regarding the type of research conducted, approximately 70% of research activities are oriented to applied research, while 30% belong to basic research.

The faculty's **long-term R&D goals** include:

- In healthcare research, the development of highly specialised personalised care tailored to individual patient needs.
- The advancement of telemedicine.
- Research aimed at evaluating knowledge and implementing new findings, innovations, and research results into the curricula of study programmes and lifelong learning courses.
- Research focused on the quality and safety of healthcare and social care.
- In the organisation of research, the aim is to develop high-quality projects and organisational support for AS.

Structure, Size, Staff, and Students

The faculty's student-to-academic staff ratio ranged from 19.6 to 24.0 students per academic staff member between 2019 and 2023. Given that the FHS primarily focuses on professional study programmes with a high proportion of group-based and practical teaching, the number of students is relatively high. This reflects the strong demand and pressure from healthcare institutions for a greater number of graduates.

During the evaluation period, the number of professors remained constant. The number of associate professors (docents), expressed in full-time equivalent (FTE), saw a slight decrease. The faculty made significant efforts to increase the number of assistant professors at the expense of assistant positions, mainly due to career progression encouraged by the faculty's academic career development framework (Table 3.1.1)^[3].

The age structure of faculty staff in **the first year of the evaluation period** is presented in Table 3.1.2. In the youngest age category (up to 29 years old), there were seven female assistants. In the 30–39 age group, assistant positions remained dominant (16 academic staff, 11 women), and the faculty had five assistant professors in this category (three women). In the 40–49 age group, the proportion of academic staff across positions began to even out, although assistants still formed the majority (14, of whom 13 were women). In the 50–59 age group, associate professors became the dominant category (six, of whom four were women). In this category, assistant professors (five) also

outnumbered assistants (four). In the 60–69 age group, there were three associate professors, three assistant professors, and three assistants.

In the final year of the evaluation period (Table 3.1.3), the absolute number of young assistants decreased to two (both women), and the number of assistants in the 30–39 age group declined from 16 to 12. However, there was a significant increase in academic positions in the 40–49 age group, where the number of assistant professors rose to 12, while the number of assistants remained nearly unchanged at 13. In the 50–59 age group, there were more associate professors (eight), along with a higher number of academic staff in assistant and assistant professor positions. In the 60–69 age group, there were three assistant professors and one associate professor.

Over the evaluation period, the number of students in bachelor's degree programmes increased by 42. The number of students in master's degree programmes grew by 118. In doctoral studies, all students completed their degrees, and the faculty is currently preparing a new accreditation for a doctoral study programme in collaboration with FCT. The accreditation proposal was submitted to the National Accreditation Bureau (NAU) in February 2025. The number of participants in lifelong learning courses increased by 139, with 271 students enrolled in such courses in the final year of the evaluation period (Table 3.1.4).

Throughout the evaluation period, the number of master's degree programmes increased to five, and the number of lifelong learning courses doubled from 8 to 16 (Table 3.1.5).

HTML links to additional documentation:

[1] Implementation of the Strategic Plan
[Implementation of the Strategic Plan 2022.docx](#)

[2] <https://fzs.upce.cz/cepez>

[3] Curriculum of an Academic Staff Member at FHS
[Curriculum of an Academic Staff Member at FHS.doc](#)

Table 3.1.1 - Staffing per FTE²

Academic / Professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	0.98/0	0.73/0	0.95/0	1.0/0	0.92/0	4.58/0
Associate Professor	5.03/2.63	5.58/2.72	5.49/2.09	5.01/2.1	4.47/2.17	25.58/11.71
Assistant Professor	11.56/7.83	12.95/8.99	14.7/11.45	14.84/11.68	14.37/11.45	68.42/51.4
Assistant	22.52/18.68	24.66/20.73	22.54/18.83	20.88/17.70	17.81/14.38	108.41/90.31
R&D Personnel ³						
Researchers in other categories ⁴			0.17/0.17	0.33/0.33		0.5/0.5
Technical and economic staff ⁵	8.08/7.40	8.08/7.26	8.57/8.03	8.51/8.37	8.02/8.02	41.26/39.08
Scientific, research and development staff involved in teaching activities	40.09/29.14	43.92/32.41	43.68/32.34	41.73/31.3	37.57/27.87	206.99/153.06
Early career researchers ⁶	11.92/6.91	13.50/8.27	12.95/6.94	9.04/4.61	5.48/2.82	52.89/29.55
Total ⁷	48.17/36.54	52.0/39.7	52.42/40.57	50.57/40.18	45.59/36.02	248.75/193.9

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											2	0
Associate Professor					1	1	6	4	3	1	2	0
Assistant Professor			5	3	8	5	5	3	3	1	0	0
Assistant	7	7	16	11	14	13	4	2	3	3	0	0
R&D Personnel ⁹												
Researchers in other categories ¹⁰												
Technical and economic staff ¹¹			1	1	7	6	1	1				
Scientific, research and development staff involved in teaching activities	7	7	21	14	23	19	15	9	9	5	4	0
Early career researcher ¹²	4	4	18	11								
Total ¹³	7	7	22	15	30	25	16	10	9	5	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.

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											3	0
Associate Professor							8	5	1	1	4	1
Assistant Professor			4	2	12	11	3	0	3	3	1	0
Assistant	2	2	12	6	13	13	7	4	0	0	1	1
R&D Personnel ¹⁵												
Researchers in other categories ¹⁶												
Technical and economic staff ¹⁷			2	2	6	6	1	1				
Scientific, research and development staff involved in teaching activities	2	2	16	8	25	14	18	9	4	4	9	2
Early career researcher ¹⁸			9	5								
Total ¹⁹	2	2	18	10	31	30	19	10	4	4	9	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	689	581	710	588	728	595	749	629	741	631	3617	3024
Master's ²⁰	178	173	187	182	204	199	246	224	296	265	1111	1043
Doctoral	7	6	7	6	5	5	1	1			20	18
Lifelong Learning Courses	132	132	97	96	82	78	161	155	283	271	755	732
Total	1006	892	1001	872	1019	877	1157	1009	1320	1167	5503	4817

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	6/0	6/0	6/0	6/0	6/0	6/0	6/0	6/0	6/0	6/0	30/0	30/0
Master's	4/0	4/0	3/0	3/0	3/0	3/0	5/0	5/0	5/0	5/0	20/0	20/0
Doctoral												
Lifelong Learning courses	8/0	8/0	6/0	6/0	6/0	6/0	10/0	10/0	16/0	16/0	46/0	46/0
Total	18/0	18/0	15/0	15/0	15/0	15/0	21/0	21/0	27/0	27/0	96/0	96/0

Note: For each SP type, enter the number of SPs in the Czech language in the first cell and insert the number of SPs in the English language after the slash in the same cell (e.g. 15/3), enter the number of professional SPs in the Czech language in the second cell and insert the number of professional SPs in the 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		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 Health Sciences	3.1 Basic medicine	0.1	Basic Research	96.6
	3.2 Clinical medicine	13	Balanced basic and applied research	
	3.3 Health sciences	83.5	Balanced basic and applied research	
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	0.1	Balanced basic and applied research	3.3
	5.2 Economics and Business	0	Zvolte položku.	
	5.3 Education	0.1	Balanced basic and applied research	
	5.4 Sociology	0.1	Balanced basic and applied research	
	5.5 Law	0	Zvolte položku.	
	5.6 Political science	0	Zvolte položku.	
	5.7 Social and economic geography	0	Zvolte položku.	
	5.8 Media and communications	0	Zvolte položku.	
	5.9 Other social sciences	3	Balanced basic and applied research	
6. Humanities and the Arts	6.1 History and Archaeology	0	Zvolte položku.	0.1
	6.2 Languages and Literature	0	Zvolte položku.	
	6.3 Philosophy, Ethics and Religion	0.1	Balanced basic and applied research	
	6.4 Arts (arts, history of arts, performing arts, music)	0	Zvolte položku.	
	6.5 Other Humanities and the Arts	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 standing of FHS within the research community in the Czech Republic and abroad is influenced by its size, disciplinary profile, relatively short history, and the current absence of a doctoral programme (which is now being addressed through a new multidisciplinary doctoral study programme in cooperation with FCHT). In comparison with other faculties of similar focus in the Czech Republic, FHS is considered a medium-sized faculty. It is younger than, for instance, the Faculty of Health and Social Sciences in České Budějovice or the Faculty of Health Sciences at Palacký University. As a result, FHS UPCE has a lower number of associate professors (docents) and full professors. However, despite these factors, the faculty has successfully expanded its research activities over the past five years, forming excellent research teams that produce high-quality results, particularly in applied research, often in collaboration with international institutions. The faculty has also made significant progress in interdisciplinary research and technological development, as evidenced by outputs classified as R or Fuzit (see Section 3.4).

A number of FHS academic staff hold elected or appointed positions in expert panels, professional societies, and scientific councils, as well as in organising and scientific committees of both national and international academic conferences. These conferences are hosted by partner universities or co-organised by FHS (see Section 3.6).

Faculty members are also part of editorial boards of various scientific journals, with the ten most significant journals listed in Table 3.2.2. Their involvement ensures continuous engagement with the international research community and the latest trends in health, social, and medical sciences. Additionally, invited lectures delivered by FHS academic staff abroad foster international collaboration, the establishment of new research partnerships, and the dissemination of research findings.

Holding elected memberships in professional societies enhances the faculty's prestige and enables its researchers to stay informed about current developments in their respective fields while also influencing key national and international academic discussions.

The following **FHS academic staff members** hold elected positions in professional societies:

- **Dr. Markéta Moravcová** – President of the Czech Chamber of Midwives
- **MUDr. Barbora Doležalová** – Member of the Committee of the Czech Diabetes Society
- **Doc. Vlasta Dostálová** – Member of the Field Council for Medical Simulation at Masaryk University, Brno, and Member of the Audit Committee of the Czech Society of Anaesthesiology, Resuscitation, and Intensive Medicine

- **Dr. Adéla Michková** – Chair of the Association of Social Work Educators
- **Dr. Jan Pospíchal**, – Member of the Committee of the Working Group for Cardiology Nurses and Related Professions of the Czech Society of Cardiology
- **Doc. Karel Sládek** – Member of the Scientific Council of the Faculty of Military Medicine at the University of Defence in Hradec Králové, Member of the Scientific Council of the Catholic Theological Faculty of Charles University, Member of the Field Council for Practical Theology at the Sts Cyril and Methodius Faculty of Theology at Palacký University in Olomouc, and Member of the Field Council for Cultural and Spiritual Studies at the Faculty of Education, University of Hradec Králové
- **Doc. Jana Marečková** – Deputy Director of the Centre of Evidence-Based Education & Arts Therapies: JBI Affiliated Group
- **Dr. Jana Wichsová** – Board Member and National Representative of the European Operating Room Nurses Association (EORNA)

Invited Lectures by International Experts

Invited lectures by international experts contribute to the internationalisation of the faculty environment and foster collaboration in research and development with foreign institutions. During the evaluation period, FHS hosted a total of 68 international visitors, including repeated visits. The most significant lectures delivered by these experts are listed in Table 3.2.4.

From a scientific perspective, some of the most notable visits included those of Assoc. Prof. Kelley M. Anderson and Prof. Katri Vehviläinen-Julkunen, both of whom visited FHS multiple times, actively contributing to the education of both academic staff and students. Assoc. Prof. Kelley Anderson's visit was made possible through the prestigious Fulbright Scholarship.

Among the key lecturers focusing on the integration of research into clinical practice were Deborah B. Vilas, MSW, MS, BA, and Rovenia Mera, PhD. In 2021, in addition to the international lectures already mentioned, FHS also organised a virtual mobility programme featuring four workshops by Julie Farnam, LCSW (USA) on the topic Techniques in Clinical Social Work with Abused Kids.

Participation in National and European Research Evaluation Panels

During the evaluation period, two FHS academic staff members participated in the evaluation of research grant applications for the Technology Agency of the Czech Republic (TAČR) and the Czech Science Foundation (GAČR).

- **Dr. Vít Blanař** has been an evaluator for TAČR in the field of healthcare research since 2022. In that year, he reviewed four projects, including one National Competence Centre project. In 2023, he evaluated two projects under the TREND programme.
- **Doc. Karel Sládek** was appointed for a second term (2022–2024) as a reviewer for GAČR. He serves as a panel member for Social Sciences and Humanities, Philosophy, Theology, and Religious Studies (P401), conducting regular evaluations of project proposals. Additionally, from 2022 to 2024, he was a member of the working group of the Executive Board of the Slovak Accreditation Agency for Higher Education.

Individual Awards and Recognitions

FHS academic staff received four individual awards of various types during the evaluation period:

- **Dr. Vít Blanař** co-authored an article that was ranked among the top 10% most downloaded articles in the Australasian Journal of Dermatology (Impact Factor journal, published by Wiley) over a two-year period.
- **Dr. Kateřina Horáčková** received an award for the best oral presentation at the 26th National Conference of Hradec Králové Nursing Days.
- **Prof. Arnošt Pellant** was named an Honorary Member of The Czech-German Society for Otorhinolaryngology, Head and Neck Surgery for his lifetime contributions to otorhinolaryngology and for founding the Czech-German professional conferences, which initiated significant international collaboration in otorhinolaryngology (e.g., Department of Otorhinolaryngology, Smell and Taste Clinic, TU Dresden).
- **Doc. Karel Havlíček** was awarded the highest distinction granted by the Czech Medical Chamber – the Knight of the Czech Medical Profession in 2022. He received this honour in recognition of his lifetime contributions to surgery, particularly due to his outstanding scientific and teaching activities^[1].

HTML links to additional documentation:

[1] Doc. MUDr. Karel Havlíček, CSc. – Knight of the Czech Medical Order

<https://www.lkcr.cz/tiskove-zpravy/100324cs-rytir-ceskeho-lekarskeho-stavu-doc-mudr-karel-havlicek-csc>

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
Mgr. Vít Blanař, Ph.D.	Top Downloaded Paper "Association between incontinence, incontinence-associated dermatitis and pressure injuries" (<i>among the top 10% most downloaded papers published between January 2018 and December 2019</i>)	Wiley Publisher, in <i>Australasian Journal of Dermatology</i>
PhDr. Kateřina Horáčková, Ph.D.	Best Presentation Award "Nursing in the Jewish Ghetto of Terezín"	26th Hradec Králové Nursing Days (10–11 September 2020)
prof. MUDr. Arnošt Pellant, DrSc.	Honorary Member	Czech-German Society for Otorhinolaryngology, Head and Neck Surgery
Doc. MUDr. Karel Havlíček, CSc.	Knight of the Czech Medical Order (Eques Ordinis Medicorum Bohemicorum)	Czech Medical Chamber

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. Adéla Michková, Ph.D.	Czech and Slovak Social Work, ISSN 1805-885X (Editorial board member)
doc. Petra Mandysová, MSN, Ph.D.	Central European Journal of Nursing and Midwifery, ISSN 2336-3517 (Editorial board member)
Mgr. Markéta Moravcová, Ph.D.	European Journal of Midwifery, ISSN 2585-2906 (Editorial board member)
doc. MUDr. Jaroslav Pilný, Ph.D.	Ortopedie, ISSN 1802-1727 (Deputy Editor-in-Chief) Acta Chirurgiae orthopaedicae et Traumatologiae Českoslovaca, ISSN 0001-5415 (Editorial board member)
prof. MUDr. Josef Fusek, DrSc. dr.h.c.	Kontakt, ISSN 1212-4117, (Editorial board member)
prof. MUDr. Arnošt Pellant, DrSc.	Otorhinolaryngology and Phoniatics, ISSN 1803-6597, (Editorial board member)
doc. PhDr. Jana Marečková, Ph.D.	Central European Journal of Nursing and Midwifery, ISSN 2336-3517 (Editorial board member)
doc. MUDr. Edvard Ehler, CSc., FEAN	Czech and Slovak Neurology and Neurosurgery, ISSN 1210-7859, (Deputy Editor-in-Chief)
doc. MUDr. Jaroslav Vaňásek, CSc.	Oncology, ISSN 1802-4475, (Editorial board member)
prof. MUDr. Luboš Sobotka, CSc.	Nutrition, ISSN 0899-9007, (Editorial board member) General Practitioner, ISSN 1803-6597, (Editorial board member) Internal Medicine for Practice, ISSN 1212-7299, (Editorial board member)

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
Mgr. Vít Blanař, Ph.D.	Assessment of Muscle Mass as Part of Nutritional Screening	17th International Scientific and Professional Conference Ružomberok Healthcare Days 2023, Catholic University in Ružomberok, Faculty of Health (Slovakia)	2023
doc. RNDr. ThLic. Karel Sládek, Ph.D., MBA	Ethical Virtues in the Education of Professional Qualifications	Ethical Values International Conference, Greek-Catholic Theological Faculty, University of Prešov (Slovakia)	2023
doc. Ing. Jana Holá Ph.D.	Competency Manager as a Very Useful Competency Management Tool	Symposium "Together for Patient Safety and Clinical Risk Management Across All Ages", organised by the University of Malta, Faculty of Health Sciences (Malta)	2022
Mgr. Jan Pospíchal, Ph.D.	Objective Structured Clinical Examination (OSCE) in the COVID Era	Conference "New Trends in Nursing VII.", Trnava University in Trnava, Faculty of Health and Social Work (Slovakia)	2021
Mgr. Vít Blanař, Ph.D.	Teaching of Non-Medical Professionals During the COVID-19 Pandemic	Slovak Chamber of Nurses and Midwives (SKSaPa), Online Conference Nurses as Leading Voices	2021
Mgr. Eva Hlaváčková, Ph.D.	The Life Story of a Patient – A Path to Higher-Quality Nursing Care	15th Conference Ružomberok Healthcare Days 2021, Catholic University in Ružomberok, Faculty of Health, Ružomberok (Slovakia)	2021
doc. Petra Mandysová, MSN, Ph.D.	Patient and Family Education	Virtual Pain Education Summit, 6-8 November 2020, European Pain Federation (Online Conference)	2020
PhDr. Kateřina Horáčková, Ph.D.	New Possibilities for Research and Education at the Faculty of Health Studies, University of Pardubice	The Campus Docent Sant Joan de Déu (Spain)	2019
Mgr. Jana Wichsová, Ph.D.	New Possibilities for Research and Education at the Faculty of Health Studies, University of Pardubice	The Campus Docent Sant Joan de Déu (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
Rovena Mera, Ph.D.	Faculty of Technical Medical Sciences, Aldent University, Tirana, Albania	Academic Writing	2023
Assoc. Prof. Kelley M. Anderson, PhD, FNP, CHFN-K	Department of Professional Nursing Practice, Georgetown University, Washington, D.C., USA	Nursing in the USA	2022
Prof. Sandra Buttigieg, MD, MSc., MBA, PhD	Faculty of Health Sciences, University of Malta, Malta	Challenges for Leaders and Managers of Health Systems during the COVID-19 Pandemic	2022
Dr. habil Adrienne Siket Ujváriné, PhD.	Faculty of Health Sciences, University of Debrecen, Hungary	Examining Nurses' Intention to Stay in the Workplace	2022
Assoc. Prof. Agnieszka Bień, MD, PhD, DSc.	Faculty of Health Sciences, Medical University of Lublin, Poland	Health Locus of Control in Obese Pregnant Women with Threatened Preterm Labor	2022
Dr. Raquel Esteves, PhD	Cooperativa de Ensino Superior Politécnico e Universitário, Portugal	Handwashing and Nurses: Are the Practices in Accord with Their Knowledge?	2022
Assoc. Prof. Dr. İlknur Münevver Gönenç	Faculty of Nursing, Ankara University, Turkey	Determination of Knowledge Levels and Thoughts of Students of Health Science Faculty about HPV Infection and Vaccine	2021
Assoc. Prof. Kelley M. Anderson, PhD, FNP, CHFN-K	Department of Professional Nursing Practice, Georgetown University, Washington, D.C., USA	The Georgetown PhD in Nursing	2021
Prof. Katri Vehviläinen-Julkunen, PhD, Lic HC, MS, RN, RM	Department of Nursing Science, University of Eastern Finland, Kuopio, Finland	Workshop on Mixed Methods Research Designs	2019
Deborah B. Vilas, MSW, MS, BA	Bank Street College of Education in New York, New York, USA	Children's Play Therapy Workshop for Social Workers	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
Mgr. Vít Blanař, Ph.D.	Gama 2 – 4th Call ZÉTA – 4th Call ÉTA – 3rd Call National Centres of Competence – 2nd Call	Technology Agency of the Czech Republic (TACR)	2022
Mgr. Vít Blanař, Ph.D.	TREND – 10th Public Call, Subprogramme 1	Technology Agency of the Czech Republic (TACR)	2023
doc. RNDr. ThLic. Karel Sládek, Ph.D., MBA	Regular Evaluation of Projects/Programmes; Member of the Evaluation Panel for Social Sciences and Humanities – Philosophy, Theology, Religious Studies (P401)	Czech Science Foundation (GACR)	2022-2024

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:

Between 2019 and 2023, FHS was involved in a total of nine research projects – three where the faculty was the main grant recipient, and six where it participated as a collaborating institution. Additionally, one project was conducted as contract research. The thematic focus of these projects aligns with the Concept of Health Research issued by the Ministry of Health of the Czech Republic and typically addresses socially relevant and timely topics. The number and scope of projects are proportional to the faculty's size, mission, and vision. The research focus and composition of research teams are integrated into the faculty's strategic planning for science and research. Each project proposal – along with its methodology, quality, and research teams – is reviewed by the FHS Internal Council for Science and Research [1] before submission.

1. TAČR GAMA – Taste Examination During the COVID-19 Pandemic Using Telemedicine (TASENS)

This project was developed as part of the long-term research on olfactory and taste disorders at FHS and its Otorhinolaryngology and Head and Neck Surgery Clinic (ORL) at Pardubice Hospital. The research gained particular momentum during the COVID-19 pandemic, as taste disorders became one of the key symptoms of the disease.

It was therefore necessary to develop a taste examination method that could be performed remotely to accommodate infection control measures. This method needed to be:

- Easily self-administered,
- Available remotely via secure telemetric data transmission to physicians,
- Precisely quantifiable in its results.

From the outset, the project was interdisciplinary, involving specialists from medicine, nursing, the Faculty of Chemical Technology (FCHT), and the Faculty of Electrical Engineering and Informatics. The FHS and ORL clinic played a key role in the project, as it was responsible for testing patients.

Through this interdisciplinary collaboration, researchers successfully developed a novel method for taste examination that is significantly more quantifiable than the previously used "wet method". The wet method involved applying liquid taste substances to the tongue, but the amount of substance varied depending on various factors.

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.

The newly developed dry method overcomes these limitations. It uses a plastic foil with a precisely measured amount of dried taste substance, allowing accurate and standardised taste assessment that can even be conducted in a home environment.

A mobile application was developed to accompany this method. The app enables:

- Recording patient responses to taste stimuli,
- Monitoring the correct positioning of the test foil in the mouth,
- Securely transmitting results to the physician.

The key output of the project was Utility Model No. 36406 (see Section 3.4 for details)^[2], which in 2024 led to the granting of Patent No. 310140. The test kits developed through this project were later used in the FHS AKTION Czech Republic–Austria project.

2. TAČR ÉTA - Competent Nurse for the 21st Century: Analysis and Proposal for Optimising Education and Professional Practice of General Nurses

The aim of this project was to develop a Competency Model for the education and professional practice of general nurses and to create a Certified Methodology for determining the necessary workforce capacity of general nurses to ensure the provision of healthcare services in the context of demographic changes in the Czech Republic. The project also aimed to provide proposals for the optimal number of students who should be admitted to general nursing qualification programmes in the coming years.

The project's key focus was the analysis and optimisation of nursing competencies and education. It was therefore structured into two main areas:

1. Competency analysis (professional qualifications of general nurses).
2. Workforce forecasting – determining and predicting the required number of general nurses in the long-term within the Czech Republic.

The project was successfully completed in 2021, fulfilling all planned objectives. The implementation and dissemination of results into practice are still ongoing.

The main project outcomes included:

- Competency Manager (output type R) – a software tool that utilises research findings to calculate and optimise the number of healthcare professionals with different competencies and job roles in specific workplaces (see Section 3.4 for details).
- NmetC (output type NmetC) – Methodology for Estimating the Required Number of Students and Graduates of Study Programmes in General Nursing, which was officially adopted by the Ministry of Health of the Czech Republic (see Section 3.4 for details)^[3].

Additional ongoing outputs include:

- Academic book publication (output type B).
- Impact Factor journal article (output type Jimp).

According to the project authors' knowledge, the Institute of Health Information and Statistics of the Czech Republic (ÚZIS ČR) has utilised this methodology (with a 30% contribution from UPCE) – which includes calculation procedures and formulas considering natural attrition and workforce turnover – as part of the currently discussed new national programme to support the education of non-medical healthcare professionals in the Czech Republic.

3. AKTION Czech Republic–Austria – Taste Alterations in Older Adults and Its Association with Malnutrition

This small-scale project aimed to connect two research teams from FHS that shared the potential to expand the innovative TASENS taste assessment method and establish new research collaborations in Austria at the Medical University of Graz.

The project was designed as a six-month pilot study with the following objectives:

1. Conduct a pilot study to test the feasibility of the new dry taste assessment method (TASENS).
2. Organise a workshop to share knowledge on taste assessment with international partners.
3. Develop methodology and prepare materials for a joint scoping review on taste assessment and nutrition in older adults.

For the first time, the TASENS method was used to assess taste alterations in older adults in connection with nutritional status evaluation and anthropometric measurements (e.g., handgrip strength, calf muscle circumference).

The pilot study, conducted on 55 participants from the Czech Republic and Austria, confirmed a correlation between taste disorders and an increased risk of malnutrition. The results have been compiled into a scientific article, which is currently under peer review.

The above-mentioned scoping review explored existing literature on the subject and serves as a foundation for a future large-scale research project. Based on these findings, a research gap has been identified, which will be addressed in a planned international project under the GAČR Weave funding scheme.

4. MPO – Development of a Platform for Intelligent Health Protection and Research on Its Economic Impact on the Private and Public Sectors (VANDA)

The VANDA project was carried out in collaboration between two faculties – the Faculty of Health Studies (FHS) and the Faculty of Economics and Administration (FEA) – along with the external company Principal Engineering s.r.o., which served as the main project coordinator. The project aimed to develop a zonal "digital protection" platform to monitor the occurrence and spread of viral infections. Its primary function was to track, evaluate, and predict the onset and progression of viral respiratory diseases in patients.

The platform was designed to support medical decision-making and suggest the optimal use of healthcare resources. It utilises neural networks with backpropagation, machine learning, and evolutionary algorithms to manage health protection at the individual, group, and community levels.

The project was coordinated primarily by FEA, with total funding for UPCE amounting to CZK 4.283 million, of which FEA received CZK 2.449 million and FHS CZK 1.834 million.

As part of the project, FHS conducted systematic literature reviews to identify and evaluate symptom groups of various diseases and their associated factors. Based on evidence-based practice, FHS developed health recommendations, which were made available to users via a mobile application.

The research also included long-term health monitoring of volunteers, who were provided with smartwatches and regularly reported on their health status via the mobile app. Using machine learning, risk models were created to detect early signs of illness and provide personalised health recommendations.

Due to the COVID-19 pandemic and demand from the private industrial sector, the project was expanded to include anonymised monitoring of infection spread within companies.

For FHS, the VANDA project is an example of successful commercialisation and a strong link between research, innovation, and industry. The main project output was the VANDA software (output type

R), for which FHS receives annual licensing fees (see Section 3.4 for details). Another key outcome was a meta-analysis published in an Impact Factor journal (output type Jimp).

5. Erasmus+ – Key Skill Management in Operating Room (KSMOR)

This project was conducted under the European Erasmus+ Programme, specifically within Key Action "Strategic Partnerships in Vocational Education and Training in Educational Institutions."

The project was coordinated by Agence Erasmus+ France, with additional partners from Belgium, Finland, and Switzerland, alongside FHS UPCE. The university received EUR 23.000 in funding.

The project's primary objective was to enhance the quality of perioperative care by developing and implementing standardised procedures, introducing them into practice, and evaluating their effectiveness. The target group included operating room nurses, academic staff, and students specialising in surgery and perioperative care.

FHS UPCE was responsible for:

- Developing and validating a questionnaire survey,
- Disseminating the survey across the Czech Republic,
- Analysing the collected data.

The project included participation in six international partner meetings and regular presentations of project outcomes. The research was conducted in collaboration with professional associations of operating room nurses in participating countries.

The project received support from:

- The European Operating Room Nurses Association (EORNA),
- The Czech Association of Nurses – Perioperative Nursing Section, which contributed to the dissemination of findings into clinical practice at the end of the project.

At FHS, the project results were incorporated into the curriculum of the study programmes Specialisation in Nursing – Perioperative Care and Specialisation in Midwifery – Perioperative Care.

In the international research context, the project outcomes – standardised key competencies and procedures – served as the foundation for another Erasmus+ project, MyORCO, which was also carried out at FHS between 2020 and 2023 (see Section 3.4 for details).

6. Erasmus+ – My Operating Room Nurse Coach (MyORCO)^[4]

This project was a follow-up to the successfully completed 2019 project Key Skills Management in Operating Room. It was carried out in collaboration with Belgium (main project coordinator), France, Finland, Sweden, and Greece. The total project budget was EUR 467.000, with UPCE receiving EUR 39.000.

As part of the project, a total of 88 educational videos were created, focusing on essential skills and the correct handling of surgical instruments for perioperative nurses.

The key project outputs included:

- A multilingual web platform providing educational videos on perioperative nursing,
- A photo library featuring the most commonly used surgical instruments and equipment,
- A user manual explaining how to navigate and use the web platform,
- A guideline for operating room managers and educators on integrating the platform into the training of novice perioperative nurses and teaching in perioperative care study programmes.

The platform, which makes all project outputs accessible to users, was developed in seven language versions, including Czech (see project website and Section 3.4 for details).

Researchers from FHS contributed by:

- Developing approximately one-sixth of the video scripts,
- Reviewing scripts from other countries,
- Participating in video content revisions and the development of all project outputs,
- Preparing the Czech language version of the platform and subtitles for video recordings.

At both the national and international levels, FHS researchers presented project results at scientific conferences and contributed to joint academic publications.

Access to the MyORCO platform is currently free of charge, in line with the project's mandatory sustainability requirements until 2026. Beyond this period, sustainability will be ensured through the European Operating Room Nurses Association (EORNA).

7. OP VVV – International Mobility of Research Staff at the University of Pardubice II (MEMO II)

The MEMO II project was developed at FHS to enhance the internationalisation of the faculty environment by engaging a foreign researcher in academic activities. Through this project, FHS received funding to cover the personnel costs of the visiting researcher.

As part of the project, Dr. Oshin Behl, MD, MBA, who was then affiliated with the Department of Otorhinolaryngology, Smell and Taste Clinic, TU Dresden, Germany, joined FHS for six months during the 2021/2022 academic year (from November 2021 to April 2022).

At FHS, she contributed to the TAČR GAMA (TASENS) research project, participated in the development of one conference paper and one scientific article, and engaged in teaching activities during the spring semester of 2021/2022.

Her active involvement in the faculty's daily academic operations introduced new perspectives and approaches to teaching and research, which proved to be inspiring for both faculty members and students. Her participation in teaching activities allowed students to gain a global perspective, enriching their future professional prospects.

We believe that the presence of an international researcher not only motivated the academic community to improve language skills but also encouraged greater openness to intercultural collaboration. The implementation of this project is regarded as an important step towards fulfilling the faculty's mission and vision of fostering stronger international cooperation and the internationalisation of the research environment.

8. KEGA – Nutrition and Physical Activity as Fundamental Pillars of Care for At-Risk Patients

In the bilateral KEGA project titled "Nutrition and Physical Activity as Fundamental Pillars of Care for At-Risk Patients," FHS participated as a collaborating institution, while the Catholic University in Ružomberok (Slovakia) served as the main project coordinator. The project was conducted from 2022 to 2024 and focused on examining the relationship between nutrition, physical activity, and self-sufficiency in at-risk patient groups, such as older adults, oncology patients, individuals recovering from serious illnesses, and those who had experienced pulmonary complications due to COVID-19.

The primary objective was to determine how clinical conditions affect the nutritional and functional status of patients, assessed through standardised methods. The research was carried out over three years in various healthcare and social care facilities in both Slovakia and the Czech Republic. Key research areas included the diagnosis, monitoring, and treatment of malnutrition, sarcopenia, and functional impairments.

The main project outcome is a scientific monograph, which summarises the latest research findings on care for patients with nutritional disorders and limited physical activity. The publication will serve

as a comprehensive resource for students, healthcare and social care professionals, as well as informal caregivers, providing them with evidence-based (EBP) tools to enhance patient care.

FHS did not have a dedicated project budget, but three of its academic staff members contributed to data collection, the preparation of the monograph "Nutrition and Activation in At-Risk Patients," and other project activities (such as conference presentations, a conference proceedings article, and conference organisation). Funding for publications and the conference was provided by the Slovak partner institution.

9. KEGA – Development of Educational Materials for University-Level Study of Ethical Values with a Focus on Holistic and Sustainable Societal Development

This bilateral KEGA project was conducted in collaboration with the Greek Catholic Theological Faculty of Prešov University in Prešov (Slovakia). It focused primarily on ethical values in the context of contemporary societal challenges, including those in healthcare and social work. The project was interdisciplinary, with a strong emphasis on bioethics and theology.

For FHS UPCE, the project's thematic focus was particularly relevant to academic staff teaching in bachelor's study programmes that include philosophy, ethics, communication, sociology, or social work in healthcare. The faculty's contribution was mainly in the areas of bioethics and ethical perspectives on dilemmas in medical and nursing care.

The project aimed to take a scientific approach to developing educational materials for university-level instruction on ethical values in order to support the long-term development of society. Its objective was to identify and systematically verify ethical values that are relevant to both individuals and society as a whole.

The main project outcome was the creation of a systematic framework for ethical values, which will serve as a foundational teaching resource across humanities, social sciences, and natural sciences. This framework provides students with practical tools for addressing complex contemporary challenges, including those in healthcare, social work, and public policy – for example, pandemics such as COVID-19. In a broader context, the project aimed to contribute to the stable and sustainable development of society.

10. Moravská Třebová Long-Term Care Hospital – Research on Employee Job Satisfaction: Social Climate Audit

During the evaluation period (2019–2023), FHS conducted one contract research project, initiated by a long-term care hospital. The project focused on evaluating employee job satisfaction within the hospital. The research had a healthcare management perspective, and the job satisfaction audit was carried out at the request of the hospital's management team.

The agreed objective of the audit was to assess the level of employee satisfaction and identify factors influencing it, including potential improvements to the work environment. The hospital management intended to use the audit findings for planning and implementing measures aimed at increasing staff satisfaction.

The research findings were delivered to the hospital as the contracting party and serve as a basis for objective interventions in organisational structures, procedural adjustments, modifications to internal documentation, and overall hospital operations. The goal was to enhance both efficiency and safety in healthcare service provision.

The main output of this contract research project was classified as output type O (Other): a Final Report, which was submitted to the RIV (Register of Information on Results). However, in accordance with the agreement between the contracting parties, the report's content remains confidential.

This was the first contract research project conducted at FHS, providing valuable experience for the research team and the faculty as an institution. Following this initial success, FHS began to engage more actively in contract research, in line with its mission and strategic objectives. Another contract research project was launched after the evaluation period, in 2024.

HTML links to additional documentation:

[1] Internal Council for Science and Research
[Internal Council for Science and Research at FHS.docx](#)

[2] Utility Model No. 36406 (TASENS)
[MEP 2025 - Utility Model No. 36406 \(TASENS\).pdf](#)

[3] Methodology of the TAČR Project "Competent Nurse for the 21st Century"
<https://mzd.gov.cz/wp-content/uploads/2022/11/Osvedceni-o-uznani-uplatnene-metodiky-jako-vysledku-vyzkumu-experimentalniho-vyvoje-a-inovaci.pdf>

[4] MyORCO
<https://myorco.eu/indexm.php>

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
TAČR GAMA	Taste Assessment During the COVID Pandemic Using Telemedicine		400/15779	925/36489	584/23035	
TAČR ÉTA	A Competent Nurse for the 21st Century: Analysis and Proposal for Optimising the Education and Professional Practice of General Nurses	1075/42406	1053/41539	250/9870		
AKTION Czech Republic-Austria	Taste Alterations in Older Adults and Their Association with Malnutrition					29/1148
Total			1075/42406	1453/57318	1175/46359	584/23035
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 (MoIT) – Operational Programme Enterprise and Innovation for Competitiveness, Application Grant Programme	Development of a Platform for Intelligent Health Protection and Research on the Impact of Its Implementation on the Economy of the Private and Public Sectors (Vanda)			231/9100	969/38219	635/25042
Erasmus+ (Funded by the EU)	Key Skill Management in the Operating Room (KSMOR)	292/11522				
Erasmus+ (Funded by the EU)	My Operating Room Nurse Coach (MyORCO)			278/10975	441/17401	230/9090

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.

Operational Programme Research, Development and Education (OP RDE)	International Mobility of Research Staff at the University of Pardubice II (MEMO II)			224/8825	447/17649	
KEGA (Ministry of Education of the Slovak Republic)	Nutrition and Physical Activity as Fundamental Pillars of Care for At-Risk Patients					
KEGA (Ministry of Education of the Slovak Republic)	Development of Materials for Higher Education on Relevant Ethical Values with a Focus on Holistic and Sustainable Societal Development					
Total		292/11522	0/0	733/28900	1857/73269	865/34132

Table 3.3.2 - Contract research activities

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
Long-Term Care Hospital Moravská Třebová	Research on Employee Job Satisfaction – Social Climate Audit					85/3353
Total						85/3353

Note: List and describe contract research activities with 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:

1. VANDA – An Intelligent Digital Platform to Protect Workers in Companies and Organisations from Infectious Respiratory Diseases

The VANDA digital platform leverages artificial intelligence (AI) and wearable electronic devices to enhance the prevention and protection of workers in companies and organisations against infectious respiratory diseases. Additionally, its solutions provide broader protection for businesses and organisations by mitigating the impact of labour shortages caused by employee absences due to illness.

VANDA monitors and predicts the spread of diseases within both immediate and wider surroundings of individuals, groups, and communities. It continuously tracks the physiological functions and physical activity levels of workers to assess the likelihood of respiratory infections. The platform also interacts with users to subjectively evaluate their health status and alerts them to worsening conditions. All collected data is analysed in the context of interindividual differences, considering factors such as age and gender.

Through its proprietary AI ecosystem, VANDA integrates data from external systems to improve predictive accuracy. During the software development phase, an economic impact study was conducted under real operational conditions. The findings indicate that VANDA reduces the incidence of severe respiratory infections requiring prolonged treatment by up to 60%. The primary financial benefit for employers stems from lower costs associated with sick leave compensation. Using a proprietary methodology developed during the research, it was found that medium-sized companies with up to 100 employees could save up to five times the average monthly salary annually.

VANDA is one of the FHS research projects (see Section 3.3) that have been successfully commercialised. Thanks to interdisciplinary collaboration with the FEA at UPCE and the company Principal Engineering s.r.o., the research findings were swiftly transferred into practice.

Since 2023, FHS and FEA have received annual licensing fees (CZK 50.000 / EUR 1.953). According to the Agreement on the Use of Project Outcomes between UPCE and Principal Engineering s.r.o., these payments will continue until 2027.

2. My Operating Room Nurse Coach – Web-Based Educational Platform MyORCO

The My Operating Room Nurse Coach (MyORCO) functions as a web-based educational platform providing:

- Training videos on perioperative nursing,
- A photo library of commonly used surgical instruments and equipment,

²⁹ See Terms definition.

- A user manual explaining how to navigate the platform,
- Guidelines for operating room managers and educators on how to incorporate the platform into the training of novice perioperative nurses and teaching in perioperative care programmes.

Since the project's completion in 2023, dissemination of its outcomes has been ongoing in individual countries, primarily through scientific conferences and hospital collaborations. In the Czech Republic, project results have been made available to perioperative nurses at Pardubice Hospital, and a research collaboration agreement is currently being prepared with the Central Military Hospital in Prague (ÚVN). ÚVN plans to incorporate the platform into its perioperative nurse adaptation process.

As part of the collaboration with healthcare practice, an ongoing survey is being conducted among Czech users of the platform to assess its benefits and user-friendliness.

The implementation of this project and the accessibility of the platform for perioperative nurses across multiple countries is expected to have a positive impact on perioperative care safety and may contribute to a reduction in adverse events related to perioperative procedures. As a result, a broad patient population may benefit from the project's findings.

In connection with the project outcomes and their dissemination within the professional community, the following scientific outputs have been produced:

- 1 Impact Factor journal article (Jimp),
- 1 peer-reviewed journal article (Jost),
- Several conference presentations at both national and international scientific events.

3. Quality of Life in Women During the Menopausal Transition

This scientific output (output type B – monograph) focused on assessing the quality of life in relation to care provided to women during the menopausal transition. The publication describes the menopausal period, defines quality of life and the methods for its assessment, and provides an overview of the diagnostic, therapeutic, and symptom management approaches for oestrogen deficiency in Czech clinical practice.

The author introduces the process of developing the Czech version of an established quality-of-life assessment tool, specifically the Menopause Rating Scale (MRS), and its application in evaluating menopause-related symptoms. The Czech pilot version of the MRS questionnaire was developed through a back-translation process and was subsequently standardised based on data from 222 respondents – women aged 45–65 years who had naturally entered menopause and experienced symptoms of oestrogen deficiency. A final validated Czech version of the questionnaire was later used to assess quality of life in a second sample of 1,199 women with similar characteristics. The findings indicate that younger women tend to report a higher quality of life overall, with most women experiencing mild to moderate symptoms.

The Menopause Rating Scale represents a novel tool for Czech clinical practice in assessing subjective symptoms and menopause-related concerns, enabling quantitative evaluation and longitudinal comparison over time. The questionnaire is time-efficient, practical, and well-accepted by both patients and healthcare professionals.

For the medical community, this research provides a reliable diagnostic tool tailored to the Czech environment, facilitating its effective integration into gynaecological practice. For the general public and patients, the study contributes to improving care by enhancing diagnostic accuracy and enabling a more individualised approach. Ultimately, these advancements enhance the quality of life for menopausal women and support their overall health and well-being.

4. TASENS – Utility Model No. 36406: Taste Tester, Test Kit Including the Tester, and a Data Collection System for the Test Kit Application

The utility model is an output of the TAČR GAMA project titled "Taste Examination During the COVID-19 Pandemic Using Telemedicine (TASENS)" (see Section 3.3).

Taste assessment plays a crucial role in identifying symptoms of various diseases, evaluating recovery progress, and detecting taste loss. The TASENS test kits are based on stimulating taste receptors on the tongue. The TASENS tester consists of a substrate containing a printed layer with taste stimulants, allowing precise, standardised taste assessment.

The key advantage of this method is its suitability for self-examination, enabling patients to perform the test outside a clinical setting. Unlike traditional liquid-based taste tests, the TASENS dry testing method eliminates issues such as dripping solutions and ensures ease of use. The amount of taste stimulant is precisely defined by the printed layer thickness and surface area, ensuring consistent and reproducible testing. During TASENS development, potential gender influence on taste were considered.

The TASENS tester includes foils impregnated with different concentrations of taste substances, designed for testing the left, right, or both sides of the tongue. This precisely designed methodology for taste assessment had not previously been described in scientific literature, as evidenced by the Czech patent granted in 2024 (No. 310140). Following this success, an application for a European patent was submitted.

A mobile application was developed alongside the TASENS test kit, allowing:

- Patients to record their responses to taste stimuli,
- Healthcare professionals to monitor foil placement in the mouth,
- Remote transmission of test results to physicians for evaluation.

Currently, TASENS test foils are being used at Pardubice Hospital and in collaborating institutions, including:

- Department of Otorhinolaryngology, Smell and Taste Clinic, TU Dresden, Germany,
- Institute of Nursing Science, Medical University of Graz, Austria.

Additionally, TASENS test kits were employed in the FHS AKTION Czech Republic–Austria project (see Section 3.3).

5. Methodology for Estimating the Required Number of Students and Graduates of General Nursing Education Programmes

This output (type NmetC) was developed as part of the TAČR ÉTA project – Competent Nurse for the 21st Century (see Section 3.3). The main institution responsible for the output is the University of Chemistry and Technology in Prague (VŠCHT), with the University of Pardubice contributing 30%.

The methodology for estimating the required number of students and graduates in general nursing education programmes is built on three pillars:

1. Analysis and projection of the number and age structure of general nurses,
2. Forecasting the demand for healthcare services in the context of demographic changes,
3. Analysis and projection of the education system in the relevant study programmes.

Between 2008 and 2017, more than 78.000 general nurses accounted for 70–75% of all non-medical healthcare professionals (NLZP) with professional qualifications. However, their age distribution was significantly unbalanced, with a peak at ages 44–46.

The methodology is based on:

- Age group projections of general nurses,
- Estimating workforce attrition due to retirements and exits from the labour market,
- Predicting the intake of new graduates,
- Assessing healthcare service demand,
- Considering student dropout rates in nursing education programmes.

The methodology is designed for use by:

- The Ministry of Health and the Ministry of Education, Youth and Sports of the Czech Republic,
- Individual universities and higher vocational schools offering nursing education.

According to available information, the Institute of Health Information and Statistics of the Czech Republic (ÚZIS ČR) has adopted this methodology for national-level projections of non-medical healthcare workforce needs. It is therefore reasonable to assume that this methodology, along with its dissemination within professional circles, contributed to the planned increase in funding for higher education institutions training non-medical healthcare professionals in the Czech Republic. Given these factors, this outcome represents a significant contribution to society with a nationwide impact^[1].

6. Competency Manager

The Competency Manager software application was developed as part of the TAČR ÉTA project – Competent Nurse for the 21st Century (see Section 3.3). The application was provided for use in five hospitals within the Pardubice Region Hospital network (Nemocnice Pardubického kraje a.s.) under a licence agreement signed in 2021.

The Competency Manager was created as an outcome of the project, with Pardubice Region Hospital acting as the application supervisor. This ensured that feedback and practical requirements from the healthcare sector were fully incorporated throughout the project's development.

The application enables competency management for individual nurses in alignment with standards for safe and high-quality healthcare delivery. It is based on a competency model for general nurses, which defines:

- The scope of each nurse's competencies based on their professional role,
- Their career development,
- Their continuing education,
- The hospital's mission and values.

The Competency Manager supports:

- Analysis, review, and maintenance of key competencies,
- Identification of internal learning potential,
- Enhancement of student preparation for professional practice.

While primarily designed for nurses, the application is suitable for all professional groups within hospital staff. Implementation is carried out within the hospital's internal ICT infrastructure, which will manage the project outcomes and ensure the long-term sustainability of the software.

It is expected that gender differences do not play a role in the usage of this application.

7. Cribriform Plate Injury After Nasal Swab Testing for COVID-19

This article^[2] presents a notable case report on a skull base injury caused by nasal swabbing during PCR testing for SARS-CoV-2. The report provides a detailed account of the initial swabbing error, subsequent complications, and the successful surgical repair.

Published in September 2021, this article holds particular significance due to its timing, as it preceded the major COVID-19 wave in early 2022, when PCR testing was at its peak. At the time of publication, it was the only known case of skull base injury caused by a nasal swab in an otherwise healthy patient, underscoring a rare yet serious risk associated with a widely used diagnostic procedure.

The article's key contributions are multifaceted:

1. It emphasises the importance of correct nasopharyngeal swabbing technique, warning against improper angling.
2. It highlights cerebrospinal fluid leakage (liquorrhoea) as a potential complication which, if left unrecognised, can lead to further severe conditions such as meningitis.
3. It documents persistent olfactory disturbances as a long-term consequence of the injury.

Published in *JAMA Otolaryngology–Head & Neck Surgery* (Impact Factor in 2021: 8.961), this article has been widely cited by leading international researchers and institutions, demonstrating its academic impact. Citations include references from prestigious universities such as Swinburne University, the University of Western Ontario, and Korea University College of Medicine. To date, it has received a total of 12 citations in the Web of Science (WOS), with an additional 6 citations outside WOS.

Dr. Jan Vodička, from the University of Pardubice, played a significant role in the article's development, collaborating with co-authors from Pardubice Hospital.

Beyond its scientific contribution, the article raises awareness about safe testing practices and provides critical guidance on the early recognition of skull base injuries, potentially preventing severe complications in patients worldwide.

8. Quality of Life in Patients with Stable Ischaemic Heart Disease

This scientific monograph^[3] (output type B) focuses on assessing the quality of life in patients with stable angina pectoris. It evaluates the impact of cardiovascular risk factors on quality of life and explores the potential for predicting mortality and rehospitalisation. Such assessments are widely used in clinical studies to evaluate treatment effectiveness, and their importance continues to grow.

A pilot study using semi-structured interviews was conducted to select the most appropriate quality-of-life assessment tool. The Czech version of the Seattle Angina Questionnaire (SAQ) was chosen, complemented by the EuroQol EQ-5D-3L as a generic assessment tool.

For the main phase of the study, a quantitative, cross-sectional research design was employed, incorporating survey data, medical documentation analysis, and coronary angiography results. The research included a one-year prospective follow-up of patients with stable angina pectoris, tracking mortality and rehospitalisation rates.

Data were collected from 165 patients with stable angina pectoris and a control group of 174 patients undergoing coronary angiography without Ischaemic heart disease. Patients were stratified by age and gender to reflect the incidence of this disease in the general population.

Key findings indicate that patients with stable angina pectoris report a lower quality of life. However, no significant correlation was found between subjective quality-of-life assessments and objective disease severity. Importantly, the study demonstrated that quality-of-life assessment tools can predict both mortality and rehospitalisation in patients with stable angina pectoris.

Integrating patients' subjective perceptions of their condition into clinical practice may enhance the quality of healthcare delivery. In nursing practice, quality-of-life assessments can inform the intensity of nursing interventions, such as consultations and patient education, potentially improving care efficiency and cost-effectiveness.

Furthermore, tailoring care plans, education, lifestyle modifications, and dietary recommendations based on patients' subjective needs may lead to greater patient adherence and involvement in treatment planning and management.

9. Dysphagia and Factors Associated with Malnutrition Risk: A 5-Year Multicentre Study

The article "Dysphagia and Factors Associated with Malnutrition Risk: A 5-Year Multicentre Study"^[4] examines the relationship between swallowing disorders (dysphagia) and malnutrition. It is a highly cited international publication, with 34 citations in the Web of Science (WOS) and an additional 19 citations outside WOS to date.

The study also employs regression analysis to identify statistically significant factors associated with these conditions. The research was conducted through a secondary data analysis of records collected over five years from 237 healthcare departments in Austria, involving 17,580 patients.

This research has substantial societal significance in the areas of healthcare and patient quality of life. Its practical impact lies in raising awareness among healthcare professionals about the co-occurrence of malnutrition and dysphagia, which should be assessed together rather than as separate conditions – particularly in high-risk patient groups identified through regression analysis, including those with cancer, stroke, or respiratory diseases.

Until now, these conditions have often been considered independent despite their interrelated nature. Based on their findings, the authors recommend routine screening for malnutrition risk in all hospitalised patients and mandatory dysphagia screening for all patients diagnosed with high-risk conditions (cancer, stroke, or respiratory diseases).

Early detection through screening enables timely interventions, leading to:

- More effective prevention of complications during hospitalisation,
- Shorter hospital stays,
- Faster recovery and wound healing,
- Reduced healthcare costs,
- Improved patient quality of life.

The study's findings have international applicability and are compared with global approaches and experiences in the published article.

10. Methods of Translation and Cross-Cultural Validation of Foreign Assessment Tools

This monograph (output type B) consists of three main chapters. It is intended for general nurses and other healthcare professionals involved in translating foreign assessment tools.

Chapter 1 – Methods of Translating Foreign Assessment Tools

This chapter introduces readers to key concepts related to the translation of assessment tools from one language to another. It explains the various translation methods available and strategies for improving the process. Additionally, it highlights critical factors that should be considered when translating assessment tools to ensure accuracy and cultural appropriateness.

Chapter 2 – Translation and Cross-Cultural Validation of the Iowa Pain Thermometer-Revised

Using the specific example of translating the Iowa Pain Thermometer-Revised, this chapter provides a step-by-step demonstration of the translation and cross-cultural validation process. It presents a range of quantitative and qualitative methods used to develop a culturally sensitive and equivalently translated Czech version of the tool. The chapter introduces translation methodologies that are widely discussed in international literature but have not yet been extensively utilised in the Czech Republic. Additionally, it addresses other crucial aspects of the translation process that are often overlooked.

Chapter 3 – Translation Framework and Protocol

This chapter provides practical tools to facilitate the translation process and its documentation. Key components include:

- A visual framework illustrating the translation process for assessment tools,
- A model translation protocol, available in both Czech and English,
- A table with hypothetical parameter calculations, designed for researchers who wish to apply quantitative methods in translation, as described in this monograph.

These tools were developed based on findings from international research literature as well as first-hand insights gained through the translation and validation of the Iowa Pain Thermometer-Revised. This monograph serves as a valuable resource for researchers, providing structured guidance for the translation and adaptation of foreign assessment tools in healthcare and research environment.

HTML links to additional documentation:

[1] Planning the Optimal General Nurse Graduates: Methodology and Significance
<https://link.springer.com/article/10.1007/s44250-024-00155-w>

[2] Cribriform Plate Injury After Nasal Swab Testing for COVID-19
<https://jamanetwork.com/journals/jamaotolaryngology/fullarticle/2784128>

[3] Quality of Life in Patients with Stable Ischaemic Heart Disease
<https://eshop.upce.cz/epub/9007567/kvalita-lzivota-pacientlz-se-stabilna-ischemickou-chorobou-srdeana>

[4] Dysphagia and Factors Associated with Malnutrition Risk: A 5-Year Multicentre Study
<https://onlinelibrary.wiley.com/doi/10.1111/jan.14188>

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

Type of result ³⁰	Year of application	Name
R	2023	VANDA - An Intelligent Digital Platform to Protect Workers in Companies and Organisations from Infectious Respiratory Diseases
A	2023	My Operating Room Nurse Coach on the Web-Based Educational Platform MyORCO
B	2023	Quality of Life in Women During the Menopausal Transition
Fuzit	2022	TASENS - Utility Model No. 36406: Taste Testing Device, Test Kit Including This Device, and a Data Collection System for the Test Kit Application
NmetC	2022	Methodology for Estimating the Required Number of Students and Graduates of Study Programmes in General Nursing
R	2021	Competency Manager
Jimp	2021	Cribriform Plate Injury After Nasal Swab Testing for COVID-19
B	2020	Quality of Life in Patients with Stable Ischaemic Heart Disease
Jimp	2019	Dysphagia and Factors Associated with Malnutrition Risk: A 5-Year Multicentre Study
B	2019	Methods of Translation and Cross-Cultural Validation of Foreign Assessment Tools

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 **Centre for Technology and Knowledge Transfer (CTKT)** at the University of Pardubice (UPCE) serves as the primary institutional partner for the FHS in translating research findings into practical applications. FHS actively collaborates with CTKT in identifying opportunities for technology transfer and fostering partnerships. CTKT plays a direct role in expanding research impact, ensuring sustainability, facilitating interfaculty collaborations, and identifying industry partners interested in research applications.

The system for transferring research and development (R&D) outcomes into practice is a key pillar of FHS's commitment to maximising the societal and clinical impact of research. The primary beneficiaries of FHS's research include:

- Healthcare professionals,
- Patients,
- Researchers and academic institutions and private companies.

Dissemination Strategies

FHS employs a multi-tiered approach to research dissemination. One of the primary methods for reaching the scientific community is publishing in high-impact journals with a high Article Influence Score (AIS) and Impact Factor (IF). Internationally renowned and well-ranked journals provide a broader readership and greater potential for research adoption.

Recognising this, FHS prioritises publishing in such journals and actively pursues Open Access (OA) publications to further enhance visibility, readership, and citation impact (see Section 3.6).

International Collaboration

International cooperation is crucial for FHS's knowledge transfer strategy, enabling the exchange of best practices and expertise. As part of this global outreach, FHS organises international conferences, fostering cross-border collaboration.

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 the past five years, the proportion of Jimp-indexed articles published in international collaboration has significantly increased. Of the 58 Jimp articles published, 12 involved international co-authorship, demonstrating FHS's growing global research network.

Training and Capacity Building

FHS academic staff have actively participated in training programmes related to technology transfer and research implementation. These include:

- Workshops and courses organised by CTKT,
- Participation in the international project INVENTHEI (INnoVation and ENTrepreneurship in HEIs), which ran from 2021 to 2023.

Building on the success of INVENTHEI, FHS launched the deep-INVENTHEI project in 2023, which continues to strengthen research commercialisation efforts.

Lifelong Learning and Public Engagement

Another key channel for knowledge transfer is lifelong learning programmes (CŽV) and specialised courses for the general public (see Section 3.6 for more details). These initiatives ensure that scientific knowledge is accessible beyond the academic and clinical sectors, extending its benefits to society at large.

Examples of Collaboration and Identification of End-Users

The following examples illustrate successful applications of FHS research outputs that have been implemented both in the Czech Republic and abroad:

1. Involvement of Application Guarantors in the TAČR ÉTA Project – Competent Nurse for the 21st Century

From the early stages of research projects, FHS actively engages application guarantors and professional organisations (e.g., the Czech Association of Nurses, the Czech Chamber of Midwives) to ensure that research outcomes are practical and have a high likelihood of implementation in professional practice. Collaborating with professional organisations strengthens the sharing and application of new knowledge among healthcare professionals and enhances the visibility of FHS research.

A key example is the TAČR ÉTA project (see Section 3.3), which was designed from the outset as a multidisciplinary initiative in collaboration with the University of Chemistry and Technology in Prague. Additionally, application guarantors and potential cooperating professional organisations were engaged early on, even during the project proposal phase.

The practical application of the software output (type R) was discussed in advance with Pardubice Regional Hospital, which adopted the software after the project's completion and planned its integration into its data infrastructure. Furthermore, the project resulted in a certified methodology (NmetC), which was pre-negotiated with the Czech Association of Nurses before the project application was submitted. The Czech Ministry of Health formally approved the methodology.

This successful involvement of application guarantors was made possible due to the active participation of FHS academic staff in professional organisations and advisory bodies.

2. Industry Collaboration in the VANDA Project

The project "An Intelligent Digital Platform to Protect Workers in Companies and Organisations from Infectious Respiratory Diseases" (see Section 3.3) was led by the private company Principal Engineering s.r.o., which was the main recipient of funding. The project was inherently multidisciplinary, integrating healthcare research expertise with economic and technological

approaches. In this specific case, FHS was approached to participate in the project, demonstrating the faculty's growing reputation in applied research.

Beyond the originally planned outputs, FHS successfully expanded the dissemination of research findings through:

- Scientific publications in peer-reviewed journals,
- A public outreach article published with Principal Engineering s.r.o.

The company continues to manage the software application and distributes it through its existing commercial channels. This industry collaboration facilitated rapid and effective transfer of research results into practice, marking FHS's first successful case of research commercialisation, which has also generated revenue for the faculty.

3. Identifying End-Users for TASENS

The TASENS utility model (Fuzit) was developed under the TAČR GAMA project – Taste Examination During the COVID-19 Epidemic Using Telemedicine (see Section 3.3). During the project planning phase, the lead researcher and FHS staff reached out to potential collaborators from two other faculties (FCHT and FEI). This proactive approach led to the establishment of a promising collaboration, which continued throughout the project and remains active today.

The transfer of this research outcome into practice is occurring through multiple channels:

- Dissemination within the scientific community via journal publications (some still under peer review),
- Securing a patent (granted in the Czech Republic in 2024),
- Presentations at international scientific conferences,
- Direct engagement with potential foreign partners interested in applying the research.

As a result, the Department of Otorhinolaryngology, Smell and Taste Clinic (TU Dresden, Germany), and the Institute of Nursing Science, Medical University of Graz, Austria have adopted TASENS testing foils.

4. Dissemination of Audiovisual Outputs from the MyORCO Project

The audiovisual outputs were developed through international collaboration under the Erasmus+ project (see Section 3.3).

The FHS research team has so far approached three hospitals in the Czech Republic (Pardubice Regional Hospital, the University Hospital Hradec Králové, and the Central Military Hospital in Prague – ÚVN) with the offer to provide the platform and its full content free of charge to perioperative nurses. The goal is not only to facilitate professional training but also to continue research into the platform's usability and user-friendliness. At present, the platform is already being used at Pardubice Regional Hospital.

In 2024, a research collaboration agreement was successfully negotiated between the ÚVN and the UPCE, allowing for the integration of the MyORCO platform into professional training. Discussions are ongoing with the University Hospital Hradec Králové, and there are plans to gradually reach out to other institutions. Additionally, potential users are being identified through presentations at professional conferences.

The long-term sustainability of the web platform will be maintained by the European Operating Room Nurses Association (EORNA), which will continue to fund the platform's operation and functionality in all language versions.

5. International Collaboration in Nutritional Assessment of Patients

Since 2019, following previous research collaboration with the Institute of Nursing Science at the Medical University of Graz, Austria, FHS researchers have been working on nutritional assessment in nursing care – a highly relevant research area at the international level. This collaboration led to a research article publication (see Section 3.4), which has now accumulated over 30 citations in Web of Science (WOS).

Building on this successful partnership, both institutions have continued their research efforts, resulting in five joint publications in Q1–Q2 journals (ranked by Article Influence Score – AIS) since 2019. These high-impact publications serve as an example of best publishing practices.

As a result of this ongoing collaboration, FHS has offered its Austrian partners the opportunity to expand research beyond nutritional assessment to include taste assessment using the TASENS method, maximising its research potential.

This expanded collaboration has led to the development of a new research project focusing on changes in taste perception among older adults in relation to malnutrition risk – an area that is currently underexplored in scientific literature. The TASENS method, offering new opportunities for advancing clinical research and improving patient outcomes.

Financial Resources Obtained from Non-Public, Non-Grant Sources

Since 2019, FHS has progressively improved its ability to secure funding from non-public sources related to R&D activities, research dissemination, and knowledge transfer into practice.

- In 2023, FHS secured its first-ever funding from licensing fees for the VANDA project outcomes (see Sections 3.3 and 3.4 for details).
- In 2021–2022, FHS received funding through supplementary activities from the National Institute of Public Health (Státní zdravotní ústav, SZÚ) for lecturing services. The faculty delivered Healthy Lifestyle Courses and “Health Days”, primarily targeting individuals at risk of poverty and social exclusion. During these courses, FHS academic staff applied insights from previous research studies and shared these findings with course participants.
- In 2022–2023, FHS was awarded a financial donation from the Vlček Family Foundation to support the implementation of paediatric palliative care into the FHS curriculum at the University of Pardubice. This funding was utilised through an internal faculty project, covering both research activities in this area and educational initiatives. Table 3.5.1 presents the allocated portion of the total funding of CZK 627.000, focusing exclusively on research-related activities and the dissemination of research outcomes.

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
Commercial Use of the Project Outcome – VANDA Application					50/1953
Financial Donation for Publishing the MyFHS Journal					17/671
Financial Donation for Supporting the Organisation of the Radiological Colloquium			25/986	17/671	10/395
Financial Donation for Supporting the Organisation of the International Conference on Quality and Its Perspectives	3/118			20/789	
Financial Donation for Supporting the Organisation of the Congress of the Czech Chamber of Midwives					39/1545
Financial Donation from the Vlček Family Foundation – Implementation of Paediatric Palliative Care into Teaching at FHS UPCE (only the portion allocated for research activities and the dissemination of research outcomes is included in the financial records)				30/1174	229/9030
Supplementary Activity for the National Institute of Public Health Effective Health Support for People at Risk of Poverty and Social Exclusion (Provision of Lecturing Services)			894/35288	676/26671	
Total	3/118		919/36274	743/29305	345/13594

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 communication with the public (e.g. popularisation lectures, citizen science initiatives, etc.) during the 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:

FHS employs several key communication channels for the popularisation of research, development, and innovation (R&D&I) and its engagement with the public. These channels are stratified and tailored to specific target groups within the broader public.

To reach the scientific community and potential international partners, the faculty disseminates research findings through its scientific journal Health & Caring, professional profiles of academic staff, and both general social media platforms (Facebook, Instagram) and academic networking platforms (ResearchGate, ORCID, Web of Science, Google Scholar).

Partnering healthcare and social institutions regularly receive the faculty's magazine MyFHS, which is intended for practitioners, patients, students, and the general public.

In terms of public engagement, FHS has long been developing its portfolio of lifelong learning (LLL) activities. These educational programmes target both the general public and healthcare professionals and are primarily delivered through the Centre for Health Care (CePeZ).

- **Courses for the general public**

- Provided by academic staff in collaboration with clinical practitioners and students, these courses include:
 - First aid training,
 - Psychoprophylaxis courses,
 - Educational activities for seniors focusing on healthy lifestyles and elderly care.

- **Courses for healthcare professionals**

- Delivered as certified training programmes, these courses include:
 - Mentorship in Clinical Practice,
 - Specialised Nursing Care for Chronic and Non-Healing Wounds,
 - Male Bladder Catheterisation,
 - Nursing Care for Patients with Medium- and Long-Term Venous Catheters.
- The faculty also provides specialised training in psychiatric nursing under the programme General Nurse – Nursing Care in Psychiatry.

Across various study disciplines, short-term workshops, seminars, and courses are designed to equip healthcare and social care professionals with best-practice approaches. These programmes are developed in direct response to the needs of clinical practice and collaborating partners.

CePeZ also supports research activities, integrating data collection into lifelong learning courses while disseminating research findings through training and education.

Public Outreach through Digital and Traditional Media

FHS engages with younger audiences through social media platforms and podcasts featuring academic staff interviews. For older audiences, the faculty participates in:

- Radio and television broadcasts,
- Popular science articles,
- Public lectures at senior centres,
- Courses at the University of the Third Age, in cooperation with other faculties at UPCE.

FHS also actively reaches out to prospective students and talented secondary school students by:

- Organising public seminars and engagement events,
- Supporting student research and academic projects,
- Establishing long-term partnerships with secondary schools, including a designated faculty-affiliated secondary medical school.

This comprehensive public engagement strategy ensures that FHS's research and knowledge reach diverse audiences, contributing to scientific literacy, healthcare awareness, and professional development.

Specific Activities in the Popularisation of R&D&I and Public Engagement

1. Health & Caring Journal^[1]

At the beginning of 2022, FHS, in collaboration with two other faculties of similar focus (the Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava, Slovakia, and the Faculty of Health Studies of Jan Evangelista Purkyně University in Ústí nad Labem), established the international scientific journal *Health & Caring* (ISSN 2788-0931). The editor-in-chief is doc. Petra Mandysová from FHS, with the majority of editorial work being carried out at FHS, University of Pardubice.

The journal is published twice a year in English, Czech, and Slovak, operating as an Open Access publication with no article processing charges. For FHS researchers, the journal serves primarily as a platform for early-career researchers and for the dissemination of research findings.

The target audience includes both scientific researchers and healthcare practitioners. *Health & Caring* is actively promoted at scientific conferences and within FHS's partner healthcare institutions.

2. Researcher Profiles^[2]

To facilitate new research collaborations and enhance the impact of R&D&I on society, FHS has updated and expanded the professional profiles of academic staff involved in research.

Profiles have been bilingual (English and Czech) for researchers who, within the past five years, have published at least one article in international collaboration or with international impact. This ensures greater accessibility of the faculty's research at both national and international levels.

In addition, profiles have been enriched with direct links to major academic networks and platforms, including:

- ORCID ID,
- Web of Science Researcher ID,
- Scopus Author Identifier,
- ResearchGate Profile,
- Google Scholar Profile.

All academic staff have also completed training on actively managing their profiles on these platforms. The profiles now clearly define:

- Key research areas,

- Most significant publications,
- Major projects,
- Notable R&D&I awards and recognitions.

This structured approach enhances visibility, networking, and knowledge dissemination.

3. MyFHS – Popular Science Magazine

Since 2023, FHS has been publishing a semi-annual (twice per year) popular science magazine, MyFHS, available in Czech.

Beyond covering faculty news, the magazine features:

- Articles on ongoing R&D&I projects,
- International collaborations,
- Interviews with FHS researchers and academics from other faculties at UPCE,
- Popular science articles presenting research findings to the general public.

MyFHS is published in a print run of 1.000 copies and distributed to healthcare facilities across the region and to faculty partners and collaborators. Copies are placed in waiting rooms, where patients and visitors can read them.

FHS has secured a long-term publishing partner, Multiscan, which financially supports the magazine's printing. In 2023, Multiscan provided financial support of CZK 17.000 for this initiative.

4. ResearchGate and Social Media

At present, FHS, University of Pardubice, actively uses mainstream social media platforms (Facebook and Instagram) alongside the specialised academic network, ResearchGate.

On mainstream social media, the primary target audience includes prospective students, current students, and alumni. The content shared is mostly non-scientific, providing updates about faculty events, guest lectures, upcoming conferences, and opportunities for involvement in research and development projects at FHS.

ResearchGate, on the other hand, serves as a platform for academic staff to disseminate research findings, engage in scholarly discussions, and establish new research collaborations. In line with Open Science principles and the publication policies of specific journals, academic staff use ResearchGate to share their publications and results in Open Access mode.

FHS actively encourages academic staff to maintain and update their profiles on key research platforms, including Google Scholar, Web of Science Researcher Profile, Scopus Author Identifier, ORCID ID, and ResearchGate. The strategic goal is to enhance the international visibility of FHS researchers and facilitate easier access to research outputs for potential collaborators worldwide.

5. Podcasts

FHS participates in the UPCE On Air podcast series, which is distributed across various streaming platforms, including Czech Podcasts, Spotify, and YouTube. The podcast series features academic staff, students, and alumni, who share insights into their research activities, personal experiences, and broader contributions to the field.

The main objectives of this podcast engagement are:

- For the general public: To foster interest in healthcare and social issues while promoting scientific advancements made at FHS.
- For students: To motivate them to engage in extracurricular academic and professional activities that have a positive societal impact.

Notable Podcast Guests

- **Doc. Jan Vodička, Ph.D.** – Researcher in olfaction and gustation (smell and taste). His episode focused on the importance of human senses and their role in daily life.
- **Doc. Ing. Jana Holá, Ph.D.** – Former Dean of the Faculty of Health Studies, who discussed the current state of healthcare and key challenges faced by the faculty.
- **Mgr. et Mgr. Ondřej Podeszwa** – Explored the concept of heroism and courage, particularly in the context of healthcare professions.
- **Bc. Michal Mašek** – An FHS graduate and paramedic, who shared first-hand experiences from emergency response work and unexpected moments during field operations.

This initiative has proven to be an effective tool for science communication, student engagement, and public outreach, strengthening the connection between research, education, and real-world practice.

6. Television, Radio, and Print Media Coverage

FHS has gained significant media attention in recent years, particularly due to research on olfaction and taste led by Dr. Jan Vodička. As the head of one of the faculty's research teams, Dr. Vodička has collaborated closely with the Faculty of Chemical Technology (FCHT) and the Faculty of Electrical Engineering and Informatics (FEI), University of Pardubice.

Notable Media Appearances

- **MUDr. Jan Vodička, Ph.D. (2021–2022)**
 - Featured multiple times in television and radio broadcasts.
 - Gave an interview for the research portal Vedavyzkum.cz.
 - Appeared in the Czech Television programme 'Sama doma' (January 2021), discussing new methods for assessing olfactory and gustatory disorders in COVID-19 patients.
 -
- **Mgr. Helena Poláčková**
 - Gave an interview for Czech Radio Radiožurnál, covering the organisation and curriculum of the Course on Psychoprophylaxis in Pregnancy.

7. Public Lectures for Senior Citizens, General Public, and U3V

FHS regularly organises lectures for senior citizens, in collaboration with the Municipality of Pardubice and the Senior Centre. The topics are tailored to the target audience, covering areas such as:

- First aid training
- Social welfare and services for seniors in Pardubice
- Health-related topics (e.g., degenerative spinal disorders, joint disease prevention, hearing impairments, nutrition)
- Activation techniques for seniors with dementia

Between 2019 and 2023, a total of 24 lectures were held at the Senior Centre in Pardubice.

FHS is also actively involved in the University of the Third Age (U3V), where it contributes to popularising healthcare topics through:

- On-site faculty tours for U3V participants from other faculties (e.g., Faculty of Economics and Administration – FES).
- Guest lectures by FHS academic staff at other faculties.

8. Faculty-Affiliated Secondary Schools

The Faculty-Affiliated Secondary Schools programme aims to transfer know-how and research findings to secondary school students while attracting talented applicants for future university studies. Activities are organised for both teachers and students, with a focus on research and development (R&D) awareness.

Key Initiatives

- Teacher Training in Research and Development
 - Regular training sessions for teachers from:
 - Secondary School of Healthcare and Social Services, Chrudim
 - Secondary Medical School, Pardubice
 - Enables teachers to enhance their understanding of R&D and integrate these insights into student-led Scientific and Professional Activities (SVOČ) projects.
- Competitions and Workshops for Secondary School Students
 - First Aid Competitions – Organised for students at the Secondary School of Chemical Engineering, Pardubice.
 - First Aid Lectures – Held at:
 - Josef Ressel Grammar School, Chrudim
 - EDUCA Pardubice – Secondary Vocational School, s.r.o.

These initiatives bridge the gap between secondary and higher education, fostering early engagement in healthcare and science among students.

9. Seminars and Events for the Professional and General Public

We actively participate in the organisation and implementation of various events aimed at raising awareness and educating both professionals and the general public. Through our involvement, we make a significant contribution to health literacy, the prevention of lifestyle diseases, and the popularisation of science.

Regular participation and co-organisation of events for professionals:

- Wound Treatment Conference
- Surgeons' Meeting under Kunětická Hora
- Controversies in Oncology
- Joint ENT Conferences of the Pardubice and Hradec Králové Regions
- Congress of the Czech Chamber of Midwives

Regular participation in events for the general public:

- Chrudim Hospital Health Day
- Regional Healthcare Day
- Researchers' Night
- Sports Park
- Science and Technology Fair
- Safe on the Road with the University of Pardubice

As part of the Regional Healthcare Day, we collaborate with the Pardubice Secondary Medical School to present the importance and career prospects of healthcare professions. The aim is to increase awareness of study opportunities in non-medical healthcare disciplines (involving one primary

school, four secondary schools, and 14 exhibitors from healthcare institutions across the Pardubice Region).

In 2021–2022, Healthy Lifestyle Courses and Health Days were conducted as part of supplementary activities for the National Institute of Public Health, where academic staff applied and popularised research findings from projects conducted at FZS.

10. Centre for Smell and Taste Disorders

The Centre for Smell and Taste Disorders^[3] is a joint facility of the ENT Clinic of Pardubice Hospital and the Faculty of Health Studies, University of Pardubice. It provides high-quality care for patients suffering from sensory disorders and serves as an active research hub.

Smell, taste, and trigeminal nerve perception collectively contribute to the complex experience of food and the detection of substances in the environment. Disorders of these senses are associated with various conditions, including viral infections, injuries, and neurological diseases, and were a common symptom of COVID-19.

Taste disorders may occur due to kidney or liver disease, radiation therapy (head and neck irradiation), or as a side effect of medications. Dietary composition significantly influences taste perception. Hypertensive patients have been found to have a reduced sensitivity to salt, while diabetic patients often experience impaired taste perception, particularly for sweetness.

The Centre for Smell and Taste Disorders translates research findings into practice, improving patients' quality of life and raising public awareness about the importance of these senses for health and safety.

HTML links to additional documentation:

[1] <https://healthandcaring.upce.cz/index.php/healthandcaring>

[2] <https://fzs.upce.cz/en/fzs/researcher-profiles>

[3] <https://fzs.upce.cz/en/fzs/centre-for-smell-and-taste-disorders>

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 current five-year evaluation period (2019–2023), following the previous evaluation, faculty staff aimed to address areas identified as weaknesses in the prior assessment while further strengthening the faculty's well-rated aspects. Based on the previous evaluation, FHS identified its most significant weaknesses as limited international collaboration, technology transfer, and securing funding from external sources.

Enhancement of Areas with Negative Evaluation in 2014–2018:

Expansion of International Collaboration

In the previous period, weaker international collaboration and insufficient applications for international grants were identified as key areas for improvement. The faculty actively addressed this issue. Academic staff sought to establish stronger ties and broader networks with international experts. As a result, there was an increase in the number of publications co-authored with international partners, presentations at international conferences, involvement of foreign experts in teaching at FHS, and participation in international projects.

Currently, international researchers utilise FHS research findings – there has been an increase in citation rates of articles originating from FHS, and foreign scientists have started using TASENS (Medical University of Graz, Smell and Taste Clinic, TU Dresden).

The faculty has also increased its involvement in submitting international project applications and actively engaged foreign experts. FHS secured two projects that facilitated visits by international experts and strengthened the international environment within the faculty – through the MEMO II project, Dr. Oshin Behl was hosted at FHS for six months, and the faculty successfully obtained a prestigious Fulbright scholarship, enabling a visit from Assoc. Prof. Kelley M. Anderson from Georgetown University (USA).

Additionally, the faculty implemented a new international Erasmus+ KA171 project and established new cooperation with Aldent University in Tirana (Albania). FHS successfully founded the new scientific journal *Health & Caring*, featuring an international editorial board.

During the evaluation period, there was a rise in invited lectures given abroad by FHS staff, as well as lectures delivered by international guests at FHS (see Section 3.2). Lastly, the faculty co-organised international conferences, including two international PhD conferences and two editions of the *MEKON* international conference^[1].

Contract Research

The faculty focused on expanding contract research^[2]. To inform potential stakeholders about its contract research capabilities, FHS published relevant information on its website regarding research in healthcare-related fields. In 2023, the faculty successfully conducted its first contract research activity, albeit on a smaller scale.

Securing New Funding Sources

The faculty actively sought partnerships and sponsors to obtain financial resources beyond scientific grants and public funding (see Table 3.5.1). A significant achievement was securing a substantial donation from the Vlček Family Foundation to support paediatric palliative care. This funding covered

both teaching and research activities, as well as public engagement and outreach efforts, including the organisation of a conference^[3].

Collaboration with the Centre for Technology and Knowledge Transfer (CTKT) and Commercialisation of Research Results

The faculty has established a successful collaboration with the CTKT. The faculty benefits from both its consultancy services and its direct involvement in activities related to the commercialisation of research results and intellectual property protection.

Academic staff also take advantage of training events focused on technology transfer, scientific incubators, research commercialisation, intellectual property protection, and entrepreneurship support. These educational activities have been organised either directly by CTKT or as part of international projects INVENTHEI and Deep INVENTHEI.

FHS aims to focus more on open science principles, gender balance in research teams, support for early-career researchers, and long-term sustainability in upcoming research projects.

Increasing the Number of High-Quality Publications in Jimp

During the evaluation period, the number of publications in impact factor journals (WOS) in the research fields 3.3 Health Sciences and 3.2 Clinical Medicine increased significantly. Between 2019 and 2023, 58 articles were published, compared to only 20 articles in the previous period (2014–2018).

The quality of journals and the individual publications has also improved. While FHS authors previously published mainly in Q3–Q4 quartile journals (according to AIS), recent years have seen a balanced ratio between Q1+Q2 and Q3+Q4 publications. Notably, in 2023, the number of articles published by FHS authors in Q1+Q2 journals (5 articles) exceeded those in Q3+Q4 journals (4 articles).

Recruitment of Young Researchers

The FHS leadership recognises the recruitment of young researchers as a key priority to ensure the continuity of high-quality research and creative activities at the faculty. Therefore, academic staff actively seek to identify and engage talented students and potential collaborators, motivating them to pursue research activities. To support this effort, FHS organises student scientific conferences, has introduced the possibility of awarding scholarships for student research assistance, and holds an annual Student Grant Competition, funded by institutional R&D support at the university level. The faculty has also established posts of research assistants^[4].

Faculty academics are also actively involved in Students' Research and Professional Activities (SVOČ) at secondary schools and participate in CePeZ activities at both primary and secondary schools to foster interest in scientific research.

During the evaluation period, the faculty introduced projects under its Internal Grant Competition (IGC) at FHS^[5]. These grants are designed to support small-scale research projects or facilitate additional publications following the completion of a research project.

Strengthening the Faculty's Strengths

FHS continued to focus on intensive project activities, submitting new project proposals, and ensuring high-quality training in project management. We deepened the professional development of academic staff and implemented measures for the effective administration and submission of research projects.

The introduction of an updated R&D bonus allocation scheme in 2023 further stimulated research and development activities^[6]. Additionally, we have remained committed to science popularisation. The publication of study materials and books at FHS is actively supported by the FHS Editorial Board^[7].

In the past period, we have sought to build on our previous successful research, such as:

- Chemosensory perception, ORL diseases, and swallowing disorders – extending and interconnecting these topics (e.g., oncological diagnoses in the head and neck region + swallowing disorders + taste alterations + nutritional assessment).
- Key competencies in operating room settings – expanding this research within a new project (MyORCO).
- Follow-up on telemetric hearing assessment – leveraging experience from software development in the "Portable Audiometer" project to create a new mobile application for taste assessment TASENS.

HTML links to additional documentation:

[1] <https://fzs.upce.cz/en/fzs/international-conference-quality-and-its-perspectives-2024-0>

[2] <https://fzs.upce.cz/en/fzs/contract-research>

[3] <https://fzs.upce.cz/multioborova-spoluprace-detske-paliativni-peci-0>

[4] [Dean's Measure 42024 - Activities of Research Assistants.docx](#)

[5] Internal Grant Competition at FHS

[Directive no 52023 - International Grant Competition.docx](#)

[6] Dean's Measure no. 2/2023 - The Code for Bonus Allocation

[Dean's Measure 22023 – The Code for Bonus Allocation.docx](#)

[7] Dean's Measure no. 3/2024 - Editorial Board of FHS

[Editorial Board of FHS .docx](#)

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)
Implementation of the Strategic Plan of the Faculty of Health Studies	3.1	Implementation of the Strategic Plan 2022.docx
Website of the Centre for Health Care (CePeZ)	3.1	https://fzs.upce.cz/cepez
Curriculum of an Academic Staff Member at FHS	3.1	Curriculum of an Academic Staff Member at FHS.doc
Doc. MUDr. Karel Havlíček, CSc. – Knight of the Czech Medical Order	3.2	https://www.lkcr.cz/tiskove-zpravy/100324cs-rytir-ceskeho-lekarskeho-stavu-doc-mudr-karel-havlicek-csc
Internal Council for Science and Research at FHS	3.3	Internal Council for Science and Research at FHS.docx
Utility Model No. 36406 (TASENS)	3.3; 3.4	MEP 2025 - Utility Model No. 36406 (TASENS).pdf - All Documents
Methodology of the TAČR Project "Competent Nurse for the 21st Century"	3.3; 3.4	https://mzd.gov.cz/wp-content/uploads/2022/11/Osvedceni-o-uznani-uplatnene-metodiky-jako-vysledku-vyzkumu-experimentalniho-vyvoje-a-inovaci.pdf
MyORCO	3.3; 3.4	https://myorco.eu/indexm.php
Planning the optimal general nurse graduates: methodology and significance	3.4	https://link.springer.com/article/10.1007/s44250-024-00155-w
Cribriform Plate Injury After Nasal Swab Testing for COVID-19	3.4	https://jamanetwork.com/journals/jamaotolaryngology/fullarticle/2784128
Quality of Life in Patients with Stable Ischaemic Heart Disease	3.4	https://eshop.upce.cz/epub/9007567/kvalita-zivota-pacientu-se-stabilna-ischemickou-chorobou-srdeana
Dysphagia and Factors Associated with Malnutrition Risk: A 5-Year Multicentre Study	3.4	https://onlinelibrary.wiley.com/doi/10.1111/jan.14188
Website of the Health & Caring Journal	3.6	https://healthandcaring.upce.cz/index.php/healthandcaring
Researcher Profiles	3.6	https://fzs.upce.cz/en/fzs/researcher-profiles
Centre for Smell and Taste Disorders	3.6	https://fzs.upce.cz/en/fzs/centre-for-smell-and-taste-disorders
MEKON international conference	3.7	https://fzs.upce.cz/en/fzs/international-conference-quality-and-its-perspectives-2024-0
[30] Website on Contract Research	3.7	https://fzs.upce.cz/en/fzs/contract-research
Website of the Conference on Multidisciplinary Cooperation in Paediatric Palliative Care	3.7	https://fzs.upce.cz/multioborova-spoluprace-detske-paliativni-peci-0

Dean's Measure 4/2024 – Activities of Research Activities	3.7	<u>Dean's Measure 42024 - Activities of Research Assistants.docx</u>
Directive 5/2023 - Internal Grant Competition	3.7	<u>Directive no 52023 - International Grant Competition.docx</u>
Dean's Measure 2/2023 – The Code for Bonus Allocation	3.7	<u>Dean's Measure 22023 – The Code for Bonus Allocation.docx</u>
Editorial Board of FHS	3.7	<u>Editorial Board of FHS .docx</u>

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: Faculty of Restoration (FR)

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:

The **Faculty of Restoration** of the University of Pardubice is one of the university's seven faculties and is based in Litomyšl^[1]. It is the smallest faculty within the University and has been part of the institution since 2005, when it transitioned from the private higher education institution *Institute of Restoration and Conservation Techniques* into its current form.

As part of its mission, the Faculty of Restoration serves as a centre for education, independent research, and creative activities, all with a focus on the preservation of tangible cultural heritage. In the field of education, the Faculty is committed to a personal approach and openness, embracing diversity while fostering the creative potential of its students. It seeks to cultivate a professional and competitive environment that enables success at both national and international levels. Its research activities are built on the dialogue between the natural sciences and the humanities, applying multidisciplinary principles to the protection of cultural heritage.

The Faculty of Restoration aspires to become an internationally respected centre of education with a strong emphasis on conservation and restoration, systematically contributing to the advancement of scientific knowledge, the development of human creativity, and the application of cutting-edge technologies in cultural heritage care. The Faculty is dedicated to maintaining the highest professional standards in student education and training while remaining a modern, open, and dynamically evolving institution closely connected to the global academic and professional community. Its long-term goal is to be a well-integrated, stable, and financially sustainable faculty.

Research, development, and creative activities are integral to the Faculty's mission. Given its specialised focus, the Faculty primarily engages in applied research while also contributing to basic research and contract research. Research activities span multiple levels, from addressing specific

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

issues related to conservation and restoration interventions to tackling broader challenges associated with the complex field of cultural heritage care.

A key aspect of the Faculty's research, development, and creative activities is the dissemination of acquired knowledge to both professional and general audiences. According to the classification of research and development fields, the Faculty's work predominantly falls under **Area 6: Humanities and the Arts**. Within the second-level classification, its primary subfields are **6.1 History and Archaeology** and **6.4 Arts**, where the Faculty has consistently achieved high-quality results.

The Faculty of Restoration is also actively involved in the practical implementation of research findings, either independently or in collaboration with other institutions, particularly in the field of heritage conservation at both national and international levels. The latest scientific and research outcomes are continuously integrated into both theoretical and practical teaching within the Faculty's degree programmes.

Main Research Areas and Objectives of the Faculty of Restoration

- Interdisciplinary research, development, and testing of innovative materials and advanced methods in conservation, restoration, and preventive care
- Interdisciplinary research into historical materials and technologies, artistic and craft techniques
- History of the conservation and restoration field and material history of art
- Comprehensive or specialised conservation, art-historical, and technological studies
- Development of conservation and restoration concepts and model projects for heritage buildings in collaboration with industry partners.

The Faculty of Restoration has been actively engaged in national and international research projects for a long time and is involved in the preparation of project proposals within a wide range of grant schemes. The funding obtained through project grants represents an important part of the Faculty's budget (see Table 3.3.1). The Faculty closely cooperates with other research institutions as well as industry partners in the Czech Republic and abroad. Its long-standing key research partners include:

- National Heritage Institute
- National Museum
- National Archives
- National Library of the Czech Republic
- National Technical Museum
- Research Library in Olomouc
- Institute of Theoretical and Applied Mechanics, Czech Academy of Sciences
- Institute of Art History, Czech Academy of Sciences
- University of Chemistry and Technology, Prague
- Town of Kutná Hora
- Town of Litomyšl
- University of Applied Arts Vienna (Universität für angewandte Kunst, Vienna, Austria)
- State Academy of Fine Arts Stuttgart (Staatliche Akademie der Bildenden Künste Stuttgart, Germany)
- Technical University of Cologne, Institute for Conservation Sciences (Technische Hochschule Köln, Institut für Restaurierungs- und Konservierungswissenschaft, Germany)
- Estonian Academy of Arts (Eesti Kunstiakadeemia, Tallinn, Estonia)
- Hungarian University of Fine Arts (Magyar Képzőművészeti Egyetem, Budapest, Hungary)
- IBZ Freiberg

The Faculty of Restoration has long offered education at the bachelor's and master's levels, and since 2021 also at the doctoral level. The doctoral programme Conservation Sciences in the Care of Tangible Cultural Heritage is delivered in cooperation with the University of Chemistry and Technology, Prague (VŠCHT Praha) and the Czech Technical University in Prague (ČVUT Praha). The number of students remains stable (see Table 3.1.4).

As part of its lifelong learning development, the Faculty obtained accreditation from the Ministry of the Interior of the Czech Republic in 2023 for six continuous training programmes for public administration officers, two of which were implemented in the same year. Additionally, the Faculty organised two specialist courses for gallery professionals.

The Faculty is headed by the Dean, who appoints three Vice-Deans, the Faculty Secretary, and the Heads of Studios and Departments. The studios and departments serve as the Faculty's fundamental units, responsible for its core activities. The Faculty comprises five studios and two departments. Other faculty bodies include the Academic Senate, Arts Board, Subject Advisory Board, Editorial Board, Programme Board, and the Faculty Advisory Board. The core of the Faculty consists of academic staff, researchers, and other employees, totalling 38 staff members.

HTML Links to additional documentation:

[1] <https://fr.upce.cz/en>

Table 3.1.1 - Staffing per FTE²

Academic / Professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	1.52/0	2.01/0	2.0/0	2.0 / 0	1.55 / 0	9.08 / 0
Associate Professor	1.5/0	1.5/0	1.39/0	1.02 / 0	1.0 / 0	6.41 / 0
Assistant Professor	5.9/3.9	5.72/3.71	6.25/3.77	8.05 / 4.32	7.74 / 4.25	33.66/19.95
Assistant	13.3/5.59	12.46/5.51	12.1/5.96	11.47/6.8	11.14 / 6.56	60.48/30.4
R&D Personnel ³	7.23/3.36	6.07/3.53	5.88/3.87	4.83/3.23	2.64 / 2.48	26.66/16.47
Researchers in other categories ⁴						
Technical and economic staff ⁵	8.43/7.77	8.06/7.51	7.59/7.17	7.53/ 7.48	7.54 / 7.26	39.15/37.19
Scientific, research and development staff involved in teaching activities						
Early career researchers ⁶	8.65/4.97	7.09/4.31	7.39/5.81	6.69/5.50	5.96/5.04	
Total ⁷	37.88/20.62	35.82/20.25	35.22/20.77	34.91/21.83	31.61/20.55	175.44/104.01

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									1		1	
Associate Professor					1				1			
Assistant Professor					6	4						
Assistant	5	4	5	2	5	2	1				1	
R&D Personnel ⁹	1		7	5	4	1	1	1			1	
Researchers in other categories ¹⁰												
Technical and economic staff ¹¹					6	6	2	2				
Scientific, research and development staff involved in teaching activities												
Early career researcher ¹²	3	1	8	5								
Total ¹³	6	4	12	7	22	13	4	3	2	0	3	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									1		1	
Associate Professor					1							
Assistant Professor			1	1	8	4						
Assistant	1	1	5	4	5	2			1			
R&D Personnel ¹⁵			2	1	3	3	1	1				
Researchers in other categories ¹⁶												
Technical and economic staff ¹⁷			2	2	1	1	5	5				
Scientific, research and development staff involved in teaching activities												
Early career researcher ¹⁸												
Total ¹⁹	1	1	10	8	18	10	6	6	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 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	67	55	70	64	66	57	64	55	67	57	334	288
Master's ²⁰	24	17	20	12	23	15	30	25	31	27	128	96
Doctoral	0	0	0	0	3	3	4	3	4	3	11	9
Lifelong Learning Courses	0	0	0	0	0	0	0	0	14	6	14	6
Total	67	55	70	64	66	57	64	55	67	57	334	288

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		1/0		1/0		1/0		1/0		5/0	
Master's	1/0		1/0		1/0		1/0		1/0		5/0	
Doctoral					1/0		1/0		1/0		3/0	
Lifelong Learning courses									3/0		3/0	
Total	2/0		2/0		3/0		3/0		6/0		16/0	

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		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		Zvolte položku.	0
	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 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.	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		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	10	Applied Research	100
	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)	80	Applied Research	
	6.5 Other Humanities and the Arts	10	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:

The Faculty of Restoration is a respected academic institution at both national and international levels. This is demonstrated by the interest of universities, research institutions, and other entities in collaborating on research and creative projects, as well as in the preparation and implementation of complex research or restoration tasks. The Faculty is regularly approached by national and international research and university institutions as a partner for the preparation of joint research projects.

Beyond the research projects supported and listed below, the Faculty, together with partner institutions, has contributed to the preparation of two projects within the Horizon programme (*Mongolart*, 2019; *GreMaCo* and *BIOHERO*, 2021), both of which advanced to the final round of the competition. The Faculty of Restoration also regularly organises lectures by international specialists, inviting professionals from across the Czech Republic.

Despite its limited personnel capacity, the Faculty's academic staff regularly deliver invited lectures abroad, including in Germany, Austria, Estonia, Hungary, Slovakia, Algeria, and Israel ^{[1],[2],[3],[4]}.

A **significant international contribution to the professional community** was a lecture by Ing. Bayer in Algeria in 2020, which focused on the principles of restoration as applied at the Faculty of Restoration. The lecture was intended for both the local professional community and officials from the Ministry of Culture. This initiative marked the beginning of a long-term collaboration, which was later formalised through a cooperation agreement with the École Nationale Supérieure de Conservation et de Restauration des Biens Culturels (ENCRBC), Algeria.

As a result, the Faculty successfully applied for an Erasmus+ KA171 International Credit Mobility grant, which has facilitated exchange stays for academic staff from both institutions and the admission of incoming students from Algeria.

Another invited international lecture with broader impact was a workshop in Israel, where doc. Ďoubal and Ing. Bayer shared their expertise on "*Nanomaterials for the Consolidation of Stone and Other Porous Inorganic Materials*." ^[4] These lectures were complemented by case studies and practical demonstrations. A professional discussion on-site followed, focusing on the condition and renovation of the Tower of David in Jerusalem.

In addition to the lectures, negotiations regarding further collaboration took place. As a result, a partnership agreement was concluded under the Erasmus+ programme with Western Galilee College in Akko, Israel.

Among the most **prominent invited international scholars** are Prof. Francesca Cappitelli (University of Milan – UNI MILANO) ^[5], conservator Paolo Pagnin (Lithos Restauro e Conservazione, Venice), Paolo Pastorello (independent conservator, STUDIO CRC, Rome), Pascal Querner (Natural History

Museum, Vienna)^[6], and Michal Kurzej (Jagiellonian University, Kraków) (see Table 3.2.4 for more details).

Francesca Cappitelli focuses on the microbiology of cultural heritage, including the biodeterioration of various materials such as stone, paintings, synthetic polymers, and paper. She also specialises in the bioprotection of cultural heritage in outdoor environments. As a professor at Università degli Studi di Milano, she shared her expertise and engaged in discussions with students and faculty members during her lecture at the Faculty of Restoration. Her initial visit initiated further collaboration between the two institutions^[5].

Paolo Pastorello, an Italian expert and a highly respected figure in the professional community, has contributed to the restoration of the decorations of Queen Nefertari's tomb in Luxor, Egypt, as well as paintings by Giotto, Cavallini, and Cimabue in the Upper Basilica in Assisi. At the Faculty of Restoration, he led a week-long course on *vertical tratteggio*, a method of discernible retouching developed at the Central Institute for Restoration in Rome. The students engaged in practical training in this technique, enhancing their professional skills and employability in the field^[6].

Austrian lecturer Pascal Querner conducted a course on integrated pest management for collection institutions^[7].

The lecture by Michal Kurzej from the Jagiellonian University in Kraków focused on stuccowork in late 16th-century Lesser Poland, building upon existing collaborations with colleagues specialising in Renaissance stucco decoration.

The Faculty also maintains a long-term collaboration with another Italian conservator, Paolo Pagnin, an expert from the Veneto region. During the reporting period, two of his lectures were held at the Faculty, focusing on the conservation of wall paintings, stone, and stucco. These lectures not only enriched students' specialist training but also contributed to discussions with colleagues working on projects in these conservation fields, particularly in the restoration and preservation of immovable cultural heritage.

Membership in Prestigious National and International Bodies

Several academic staff members are part of prestigious committees and organisations at both national and international levels:

- Jan Vojtěchovský serves on the Presidency of ENCoRe, a prestigious international network of higher education institutions providing education in the conservation and restoration of tangible cultural heritage.
- Jakub Ďoubal has been a member of the Scientific Committee for “Stone 2025: 15th International Congress on the Deterioration and Conservation of Stone” since 2023.
- Ivan Kopáček is the Chairman of the Association of Czech Bookbinders.
- Karol Bayer is a member of the Minister of Culture's Research Council and a member of the international non-profit organisation Forschung für Denkmalpflege und Archäometrie.

Further evidence of the Faculty's international reputation and the strong interest in collaboration is the establishment of partnerships with additional foreign institutions, including École Nationale Supérieure de Conservation et de Restauration des Biens Culturels in Tipasa, Algeria, and Western Galilee College in Akko, Israel.

HTML Links to additional documentation:

[1] [Cleaning methods for wall paintings, architectural surfaces and stone objects](#)

[2] [Training in cleaning methods for stone artworks, wall painting and architectural surfaces including evaluation and assessment of the treatment](#)

[3] [Nanomaterials for consolidation of stone and other porous anorganic materials](#)

- [4] Cleaning methods for wall paintings, architectural surfaces and stone objects - Algeria
- [5] Biocleaning and Bioconsolidation - prof. Francesca Cappitelli 2021
- [6] Retouch course - Paolo Pastorello
- [7] Course on integrated insect pest management in collection institutions - Dr. Pascal Querner

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
Jiří Kaše, Mgr.	2022 (<i>in memoriam</i>) – Awarded the Patrimonium pro futuro prize in the Heritage Conservation Personalities category for contributions to heritage conservation and for founding the restoration school in Litomyšl.	National Heritage Institute
Zdeňka Míchalová, Mgr., Ph.D.	2021 – 4th Biennial of Young Authors of the journal <i>Umění</i> , Honourable Mention.	Institute of Art History, Czech Academy of Sciences (<i>Ústav dějin umění AV ČR, v. v. i.</i>)
Renata Tišlová, Ing., Ph.D., MgA. Lucie Bartůňková, Ph.D.	2021 – Rector's Award of the University of Pardubice for the research and restoration of the Epitaph of the Hodějovský Family of Hodějov .	University of Pardubice

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
Jakub, Ďoubal, doc. Mgr. art., Ph.D.	ICAR International Journal of Young Conservators and Restorers, ISSN 2719-6852
Jakub, Ďoubal, doc. Mgr. art., Ph.D.	Permanent Scientific Committee – International Congresses on Deterioration and Conservation of Stone

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
Karol Bayer, Ing. Jan Vojtěchovský, Mgr. art., Ph.D.	<i>Cleaning Methods for Wall Paintings, Architectural Surfaces, and Stone Objects</i>	Estonian Academy of Arts, Tallinn, Estonia	2019
Jan Vojtěchovský, Mgr. art., Ph.D.	<i>A Few Practical Notes on the Design of Injection Grouts for Historic Lime Plasters</i>	Hungarian University of Fine Arts, Budapest (Tihany), Hungary	2019
Karol Bayer, Ing. Jan Vojtěchovský, Mgr. art., Ph.D.	<i>Consolidation of Wall Paintings and Stone Objects Using Nano-Lime Suspensions</i>	State Academy of Fine Arts, Stuttgart, Germany	2019
Jan Vojtěchovský, Mgr. art., Ph.D.	<i>Practical Experience with Nano-Lime Suspensions and Their Mixtures with Ethyl Silicates for Wall Paintings</i>	Bundesdenkmalamt, Kartause Mauerbach, Austria	2020
Karol Bayer, Ing. Jakub Ďoubal, doc., Mgr. art., Ph.D. Jan Vojtěchovský, Mgr. art., Ph.D.	<i>Training in Cleaning Methods for Stone Artworks, Wall Paintings, and Architectural Surfaces, Including Evaluation and Assessment of the Treatment</i>	Estonian Academy of Arts, Tallinn, Estonia	2021
Jakub Ďoubal, doc., Mgr. art., Ph.D. Karol Bayer, Ing.	<i>Nanomaterials for the Consolidation of Stone and Other Porous Inorganic Materials</i>	Western Galilee College, Akko, Israel	2022
Jan Vojtěchovský, Mgr. art., Ph.D.	<i>Consolidation of Wall Paintings Using Nano-Lime Suspensions</i>	Technische Hochschule, Cologne Institute of Conservation Sciences, Cologne, Germany	2022
Zdeňka Michalová, Mgr., Ph.D.	<i>The Renaissance Garden of Telč Castle in Moravia: History, Iconography, and Meaning</i>	Schwabenakademie Irsee, Germany	2022
Jan Vojtěchovský, Mgr. art., Ph.D.	<i>Practical Experience with Nano-Lime Suspensions and Their Mixtures with Ethyl Silicates for Wall Paintings</i>	Institut national du patrimoine, Paris, France	2023
Jan Vojtěchovský, Mgr. art., Ph.D. Karol Bayer, Ing.	<i>Cleaning Methods for Wall Paintings, Architectural Surfaces, and Stone Objects</i>	L'École nationale supérieure de conservation et de restauration des biens culturels, Tipasa, Algeria	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
Brigitta Maria Kürtösi	Assistant professor, Hungarian University of Fine Arts, Conservation Department	Bedding mortars of the late 19th and beginning of 20th century in Hungary and Bohemia	2020
Paolo Pastorello	Independent Conservator (STUDIO CRC), Rome, Italy	Methods of Roman Retouching	2022
Michał Kurzej	Jagiellonian University, Institute of Art History, Kraków, Poland	Connections Between Czech and Silesian Renaissance Stucco Works	2022
Lisa Giombini	Sapienza University of Rome, Department of Philosophy, Rome, Italy	Conserving the Original: Authenticity in Art Restoration	2022
Pascal Querner	Natural History Museum, Vienna, Austria	Monitoring and Prevention of Insect Pests in Collection Institutions – Methodological Basics for Conservators	2022
Barbka Gosar Hirci	University of Ljubljana, Ljubljana, Slovenia	Conservation and Restoration of the Paintings by Vittore and Benedetto Carpaccio from Koper Cathedral	2022
Blaž Šeme	University of Ljubljana, Ljubljana, Slovenia	Movable supports for detached mosaics in Slovenia: historical overview and current practice.	2020
Francesca Capitelli	Università degli Studi di Milano, Milan, Italy	Application of Biotechnology for the Removal of Contaminants	2022
Federica Villa	Università degli Studi di Milano, Milan, Italy	Application of Biotechnology for the Preventive Protection of Architectural Surfaces	2022
Paolo Pagnin	Independent Conservator (Lithos Restauro e Conservazione), Venice, Italy	Advanced Techniques for the Restoration of Stone and Stucco Artworks in the Veneto Region	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 project/programme call research	Name of the authority/guarantor contracting of the project/programme call	Year
Karol Bayer MSc.	NAKI II "Programme for the Support of Applied Research and Experimental Development of National and Cultural Identity"	Ministry of Culture of the Czech Republic	2019-2022
Karol Bayer MSc.	NAKI III "Programme for the Support of Applied Research and Experimental Development of National and Cultural Identity"	Ministry of Culture of the Czech Republic	2023
Renata Tišlová MSc. PhD.	NAKI II "Programme for the Support of Applied Research and Experimental Development of National and Cultural Identity"	Ministry of Culture of the Czech Republic	2020
Jan Vojtěchovský Mgr.art, PhD.	NAKI II "Programme for the Support of Applied Research and Experimental Development of National and Cultural Identity"	Ministry of Culture of the Czech Republic	2019
Jakub Ďoubal Doc.Mgr.Art. PhD.	NAKI II "Programme for the Support of Applied Research and Experimental Development of National and Cultural Identity"	Ministry of Culture of the Czech Republic	2019-2022
Jakub Ďoubal Doc.Mgr.Art. PhD.	NAKI III "Programme for the Support of Applied Research and Experimental Development of National and Cultural Identity"	Ministry of Culture of the Czech Republic	2023
Radomír Slovík Mgr. BcA.	NAKI II "Programme for the Support of Applied Research and Experimental Development of National and Cultural Identity"	Ministry of Culture of the Czech Republic	2020-2022
.Radomír Slovík Mgr. BcA	NAKI III "Programme for the Support of Applied Research and Experimental Development of National and Cultural Identity"	Ministry of Culture of the Czech Republic	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 assessed years, the Faculty of Restoration successfully obtained and implemented numerous significant national and international projects. These included projects supported by the Czech Science Foundation (GAČR), the German Federal Environmental Foundation (DBU), the National Cultural Identity Programme (NAKI) of the Ministry of Culture of the Czech Republic, as well as projects funded by the European Commission under the Erasmus+ programme.

1. Conservation of Glass and Stone Mosaics of the Czech Mosaics School^[1]

- **Lead Institution:** Faculty of Restoration, University of Pardubice
- **Partner Institution:** University of Chemistry and Technology, Prague

This project focused on the study of mosaic artworks in the Czech Republic. It had two main objectives:

1. Documenting the occurrence, types, and current condition of mural mosaics representing a specific artistic and craftsmanship technique.
2. Exploring and testing conservation approaches and methodologies aimed at raising the standard of restoration practices for mosaics.

The project was designed as an interdisciplinary endeavour, with research conducted through collaboration between historians, heritage specialists, and conservators, in cooperation with conservation technologists.

The primary output of the project was a specialised database – the Map of Czech Mosaics, which recorded stone and ceramic mosaics. Additionally, the project produced five certified heritage conservation methodologies intended for both conservators and heritage professionals working with historic mural mosaics. These methodologies cover:

- Conservation of glass mosaics in situ
- Conservation of stone wall mosaics in situ
- Conservation of glass mosaics in an epoxy bedding
- Methods for replacing missing mosaic tesserae, including the replication of Czech prefabricated glass mosaics

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.

- Cleaning mosaic glass, specifically removing graffiti
- 2. **TRACES OF CREATION – Saving the Heritage of Great Sculptors of the First Half of the 20th Century. Restoration and Care for Sculptural Monuments Made of Plaster**^[2]

- **Lead Institution:** Faculty of Restoration, University of Pardubice
- **Partner Institution:** Institute of Art History, Czech Academy of Sciences

This project focused on surveying the condition and damage of sculptural artworks, sketches, and models made with plaster-based binders. The research aimed to develop and test conservation methods and restoration technologies for safeguarding these artworks, with a particular focus on the sculptural legacy of Stanislav Sucharda (1866–1916).

Despite their artistic and historical value, plaster sculptures had not previously been the subject of systematic research that would allow for the establishment of optimal conservation methodologies. Due to the material's fragility, a significant number of plaster models are at risk of serious damage or total loss.

As part of the project, a comprehensive survey, identification, and documentation of 575 plaster sculptures by Stanislav Sucharda was conducted. These works are unique in their artistic value, thematic scope, and technological diversity.

The core of the applied research involved testing both traditional and newly developed conservation materials and techniques, optimising restoration and conservation processes for movable plaster heritage objects. The project aimed to:

- Define the limitations of individual conservation techniques
- Determine the most appropriate applications
- Establish an optimal storage regime for restored sculptures

The project's main outcomes included:

- A certified methodology for the conservation of plaster casts, providing guidance for the care and preservation of plaster artworks
- A specialist database of Sucharda's sculptural works

Findings from the project were continuously shared with both specialist and general audiences through workshops and educational programmes. The project also contributed to an interdisciplinary and transregional dialogue on:

- The importance of sculpture in shaping national cultural identity
- Challenges in the conservation and restoration of plaster sculptures

The final exhibition at the Trade Fair Palace of the National Gallery in Prague showcased Sucharda's works in the context of national identity at the turn of the 19th and 20th centuries, alongside an optimal restoration methodology for plaster sculptures.

3. **Blind Witnesses: Blind Tooling Decoration on Bookbindings**^[3]

- **Lead Institution:** Faculty of Restoration, University of Pardubice
- **Partner Institution:** North Bohemian Museum in Liberec

The project focused on interdisciplinary collaboration in the research, conservation, and presentation of specific values of written cultural heritage. The research problem centred on the history of bookbinding that developed in the Czech lands in the 16th century, forming an essential part of book culture. The project aimed to document, study, and present a unique category of cultural heritage – historical bookbindings.

All project goals were closely interconnected, with the ultimate objective of developing specialised maps in the form of a database and certified methodologies. These outputs were intended to serve as a professional platform for joint scientific research on historical bookbinding.

The research primarily focused on 16th-century Czech bookbindings, documenting blind tooling tools, identifying bookbinding workshops, and analysing decorative motifs. Only this critical documentation has created the necessary foundations for compiling a comprehensive history of bookbinding and book culture in the Czech Republic.

This project has helped bridge a fifty-year gap between Czech and international initiatives in this area. The outputs – including a map, database, methodology, and exhibition catalogue – are crucial for libraries managing historical book collections, as well as heritage institutions such as the National Heritage Institute (NPÚ), archives, and museums both in the Czech Republic and abroad.

The bilingual nature of the database makes it particularly valuable for the German-speaking cultural sphere, which played a significant role in shaping the bookbinding traditions of the Czech lands in the past.

4. Technology of Restoration of Renaissance Sgraffito Plasters – Tradition and Metamorphosis^[4]

- **Lead Institution:** Institute of Theoretical and Applied Mechanics, Czech Academy of Sciences
- **Partner Institutions:** Faculty of Restoration, University of Pardubice; Faculty of Arts, Palacký University Olomouc

The aim of the project is to revise existing knowledge of Renaissance sgraffito, evaluate the preservation of original techniques and designs, and develop new practical restoration solutions. This revision is based on an interdisciplinary survey, material analysis, and experimental study of historical craftsmanship methods.

The project places particular emphasis on preserving authentic artistic and craft qualities of figural, geometric, and ornamental sgraffito. Over time, surface degradation and repeated restoration interventions have led to the gradual loss of these original elements.

A specific focus of the project is the development of a new injection mixture and its application technology. Another research goal is to develop mortar mixtures for sgraffito reconstruction that are based on original historical technologies, materials, and traditional craftsmanship, while also adapting to modern conservation conditions and heritage restoration requirements.

The project outcomes are of significant relevance for the preservation of Renaissance sgraffito heritage across Europe, particularly in Austria, Germany, Italy, Slovenia, Poland, Switzerland, and Slovakia.

5. Renaissance and Mannerist Stucco Work on Bohemian and Moravian Territory^[5]

- **Lead Institution:** Faculty of Restoration, University of Pardubice
- **Partner Institutions:** National Heritage Institute, Faculty of Arts, Palacký University Olomouc

The main objective of the project is to thoroughly examine Renaissance and Mannerist stucco work in the Czech lands up to 1620, a topic that has been significantly undervalued both in terms of conservation and artistic-craft practice. The research is based on an interdisciplinary approach, integrating specialists from art history, heritage conservation, and restoration, with support from natural sciences.

The cataloguing of high-quality stucco artworks in the Czech Republic serves as a foundation for a synthetic study of the artistic, historical, and technological development of stucco work, placing it within the broader Central European context.

Information gathered through source analysis, historical restoration records, photographs, and other documentation will help map previous restoration efforts and interventions.

The project's main outputs include:

- A specialist database of stucco decoration
- Certified heritage conservation methodologies, which will be applied in practice by conservators, restorers, monument owners, and site managers

6. Baroque Ceiling Painting between Theory and Praxis^[6]

- **Lead Institution:** Institute of Art History, Czech Academy of Sciences
- **Partner Institutions:** Faculty of Restoration, University of Pardubice; Faculty of Arts, Masaryk University

The project aims to study and interpret the work processes and techniques used in 17th- and 18th-century mural paintings in the Czech lands, based on historical texts and conservation-technical research.

Historical painting techniques are being examined through:

- Period literature, including theoretical treatises and technical manuals
- Archival sources, such as contracts, financial records, and drafts
- Practical studies by conservators and materials scientists, focusing on selected paintings

The project aims not only to provide a solid foundation for the art-historical interpretation of mural paintings but also to contribute to their proper preservation, conservation, and restoration.

The primary outcome of the project is a scholarly monograph that will serve as a key resource for further research on mural painting in the Czech Republic and the broader Central European context. The published book will deepen the understanding of Baroque mural painting and find application in studies of early modern art, heritage conservation, and mural painting restoration. Additionally, it will serve as an essential reference for students of art history, restoration, and heritage conservation, as well as for specialists and the wider public.

7. Concept for Preventive Conservation, Securing, and Preservation of the Mural Painting Cycle in the Cloister of the Emmaus Monastery in Prague^[7]

- **Lead Institution:** Technische Hochschule Köln
- **Partner Institutions:** University of Pardubice, Faculty of Restoration; Staatliche Akademie der Bildenden Künste Stuttgart

The project aims to thoroughly examine the current state of the mural paintings and identify factors that have negatively impacted them over time. The murals under study are located in the cloister of the Emmaus Monastery Na Slovanech in Prague and date back to the reign of Emperor Charles IV, specifically to the 1460s–1470s.

These paintings are unique due to their scale, forming an extensive cycle of 26 surviving murals, originally comprising 33 scenes. Very few similar examples remain in Central Europe today.

The study will employ state-of-the-art conservation methods, some of which have never before been used at this level of quality in the Czech Republic. Following the two-year research phase, an international conference will be held to summarise findings and determine the future direction of conservation efforts.

The project goes beyond merely formulating a concept for conservation interventions, which will be repeated after 50 years for some scenes. It also aims to establish basic guidelines for the long-term maintenance of these paintings.

8. Czech Art in the 1950s-1980s in the Public Space: Recording, Research, and Restoration^[8]

- **Lead Institution:** Faculty of Restoration, University of Pardubice
- **Partner Institution:** University of Chemistry and Technology, Prague

The project aims to develop tools for the identification, documentation, and promotion of a specific segment of immovable cultural heritage – artworks created in public spaces between 1950 and 1989. For objects made from selected materials, the project also seeks to establish conservation methodologies and long-term preventive protection strategies.

Main Objectives:

- Creation of a specialised map with verified historical records from period written sources (e.g., records from the ČFVU Commission for Collaboration between Artists and Architects).
- Material research and development of preventive conservation protocols for objects made of modern materials such as concrete, cement sgraffito, and fibreglass.

Project Outcomes:

- A resource for restorers, conservators, property owners, and heritage managers responsible for these artworks
- A contribution to raising awareness and expanding knowledge about public space art

The project is closely linked to another grant-funded initiative, "Post-War Art in Architecture – Documentation and Modern Materials," which focuses on interior artworks from the socialist era.

9. International Cooperation for Professional Training in Heritage Conservation II^[9]

- **Lead Institution:** Academia Istropolitana Nova, Bratislava
- **Partner Institutions:** Faculty of Restoration, University of Pardubice; Austrian Federal Monuments Authority (Bundesdenkmalamt)

The aim of the project is to support the preservation and development of shared European cultural heritage. It contributes to raising awareness of the importance of European cultural heritage, primarily through professional education tailored to various target groups. In addition to heritage professionals, the project also focuses on the training of local government employees, architects, civil engineers, craftsmen, and private owners of historic buildings and monuments.

This is a transnational collaboration between partners from Slovakia, the Czech Republic, and Austria, aiming to develop and modernise professional training in the field of heritage conservation across these three countries.

The project is followed by Heritage Train II, which seeks to further strengthen international cooperation in heritage conservation education among Central European countries and expand the outputs of Heritage Train I. As part of this follow-up project, a database of training events and a virtual library of specialist texts on cultural heritage conservation will be created.

10. New Composite Materials for the Restoration of 20th-Century Architectural Structures^[10]

- **Lead Institution:** České lupkové závody, a.s., Nové Strašecí
- **Partner Institutions:** Research Institute of Building Materials, a.s., Brno; Faculty of Restoration, University of Pardubice

The aim of the project is to develop a new repair material for the restoration of concrete and stone substrates in 20th-century architecture, providing an alternative to currently used cement-based materials.

Further objectives include:

- Developing methods for assessing the compatibility of the new material with selected substrates
- Creating application guidelines for conservation professionals

The project also aims to streamline research activities by integrating the expertise and infrastructure of the participating institutions, enhancing collaboration between the commercial and research sectors.

The expected project outcomes will contribute to:

- Improving the competitiveness of participating companies
- Innovating restoration techniques for 20th-century buildings
- Utilising non-traditional raw materials to ensure the long-term preservation of structures for future generations

This initiative aligns with the national RIS3 strategy, which prioritises the preservation of architectural heritage. The project will produce utility models and functional prototypes, with equal contributions from all project partners.

HTML Links to additional documentation:

- [1] <https://fr.upce.cz/en/fr/conservation-of-glass-and-stone-mosaics-of-the-czech-mosaics-school>
- [2] <https://fr.upce.cz/en/fr/traces-of-creation-saving-the-heritage-of-great-sculptors-of-the-first-half-of-20th-century>
- [3] <https://fr.upce.cz/en/fr/blind-witnesses-blind-tooling-decoration-on-bookbindings>
- [4] <https://fr.upce.cz/en/fr/technology-of-restoration-of-renaissance-sgraffito-plasters-tradition-and-metamorphosis>
- [5] <https://fr.upce.cz/en/fr/renaissance-and-mannerist-stucco-work-on-czech-and-moravian-territory>
- [6] <https://fr.upce.cz/en/fr/baroque-ceiling-painting-between-theory-and-praxis>
- [7] <https://fr.upce.cz/en/fr/dbu-preventive-conservation-securing-and-preservation-of-the-cycle-of-murals-in-the-emmaus>
- [8] <https://fr.upce.cz/en/fr/czech-art-in-the-1950s-1980s-in-the-public-space-recording-research-and-restoration>
- [9] <https://fr.upce.cz/en/fr/httpsfrupceczfrinternational-cooperation-for-professional-training-in-protection-of-monuments>
- [10] <https://fr.upce.cz/en/fr/new-composite-materials-for-restoration-of-buildings-of-20th-century-architecture>

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
Ministry of Culture of the Czech Republic	Conservation of Glass and Stone Mosaics of the Czech Mosaic School; Reg. No. DG16P02M056 (NAKI II Programme)	2 099/82.8	1 807/71.3			
Ministry of Culture of the Czech Republic	Traces of Creation – Saving the Heritage of Great Sculptors of the First Half of the 20th Century: Restoration and Care for Sculptural Monuments Made of Plaster; Reg. No. DG16P02B052 (NAKI II Programme)	2 612/103				
Ministry of Culture of the Czech Republic	Czech Art of the 1950s–1980s in Public Spaces: Documentation, Research, and Restoration; Reg. No. DG16P02B030 (NAKI II Programme)	2 301/90.8				
Ministry of Culture of the Czech Republic	Renaissance and Mannerist Stucco Work in Bohemia and Moravia; Reg. No. DG18P02OVV005 (NAKI II Programme)	4 380/172.8	4 624/182.4	4 519/178.3	3 612/142.5	
Ministry of Culture of the Czech Republic	The Memory of Cemeteries: Research and Documentation for Sustainable Care of Sepulchral Monuments in the Former Sudetenland; Reg. No. DG20P02OVV014 (NAKI II Programme)		1 914.7/75.5	2 248/88.7	2 135/84.2	
Ministry of Culture of the Czech Republic	Blind Witnesses of Time: Blind Tooling Decoration on Bookbindings; Reg. No. DG20P02OVV016 (NAKI II Programme)		1 283/50.6	1 479/58.3	1 416/55.9	
Ministry of Culture of the Czech Republic	Post-War Art in Architecture – Documentation and Modern Materials; Reg. No. DH23P03OVV042 (NAKI III Programme)					2 092/82.5
Total		11 392/449.4	9 628.7/379.8	8 246/325.3	7 163/282.6	2 092/82.5

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.

In the role of another participant						
Provider ²⁷	Project name	Support (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
Ministry of Culture of the Czech Republic	The Gateway to Wisdom Open: Baroque Cultural Heritage of the Broumov and Rajhrad Monasteries – Protection, Restoration, and Presentation; Reg. No. DG16P02R047 (NAKI II Programme)	943/37.2	829/32.7			
Ministry of Industry and Trade	New Composite Materials for the Restoration of 20th-Century Architectural Structures; Reg. No. FV30150 (TRIO Programme)	1 420/56	1 375/54.2			
Czech Science Foundation (GA ČR)	Baroque Ceiling Painting Between Theory and Practice; Reg. No. 21-13208S			986/38.9	887/35	337/13.2
CESNET	System and Methodology for Scanning Historic Objects Using Unmanned Helicopters and Transferring Large Data Volumes for Professional Processing; Reg. No. 620/2017	71/2.8				
Ministry of Culture of the Czech Republic	Technology of Restoration of Renaissance Sgraffito Plasters – Tradition and Metamorphosis; Reg. No. DH23P03OVV019 (NAKI III Programme)					1 716/67.7
EU	International Cooperation for Professional Training in Heritage Conservation – HERITAGE TRAIN I; Reg. No. 2019-1-SK01 – KA202-060759		714/28.2	1102/43.5	537/21.2	31/1.2
EU	International Cooperation for Professional Training in Heritage Conservation – HERITAGE TRAIN II; Reg. No. 2023-1-SK01-KA220-VET-000166680					173/6.8
DBU (German Federal Environmental Foundation)	Concept for Preventive Conservation, Securing, and Preservation of the Mural Painting Cycle in the Emmaus Monastery in Prague					1 447/57.1
Total		2434/96	2434/96	2918/115.1	2088/82.4	1424/56.2

²⁷ Ibid.

Table 3.3.2 - Contract research activities

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
National Museum in Prague	Colour Survey of Sculptures in the Lapidarium of the National Museum in Prague	18.9/ 0.75				
Regional Museum in Chrudim	Restoration Survey of Two Artworks from the Collections of the Regional Museum in Chrudim	4/ 0.15				
East Bohemian Museum in Pardubice	Chemical and Technological Examination of a Painted Dreambook from the Collections of the East Bohemian Museum in Pardubice		16/ 0.63			
Jaroslav Koudelka	Survey of Plasters and Paint Layers – House No. 15 in Opočno		14/ 0.55			
Jewish Community of Prague	Jewish Cemetery in Litomyšl – Examination of Selected Tombstones		41/ 1.63			
Mgr. Jaroslav Veselka	Non-Invasive Examination and Laboratory Analysis of Samples – Portrait of Rudolf II		20/ 0.79			
National Heritage Institute	Survey and Analysis of Historic Plasters at Kunštát Chateau		19.5/ 0.77			
Town of Ronov nad Doubravou	Restoration Survey of a Relief on the Chittussi Villa in Ronov nad Doubravou		16/ 0.63			
City of Pardubice	Basic Examination and Condition Assessment of the Exterior of the Green Gate in Pardubice			31.6/ 1.25		
National Heritage Institute	Stratigraphic Survey of the Lacquer Layer on the Collection Object "Oriental Cabinet", Uherčice Chateau			8/ 0.3		
Pavel Skalický, Orlice s.r.o.	Restoration Survey of Selected Interior Spaces on the Ground Floor of Brandýs nad Orlicí Chateau			25.3/ 1		
National Heritage Institute	Stratigraphic Survey of Three Rooms in the Interior of Litomyšl Chateau			35.5/ 1.4		
Archaeological Centre Olomouc	Petrification of Wooden Well Components – Archaeological Find from Dolní Roveň			44/ 1.74		
National Heritage Institute	Material Research and Testing of Materials for the Restoration of the Epoxy Facsimile of the Allegory of Generosity from the Hospital Kuks			130/ 5.13		
National Heritage Institute	Basic Survey of Transferred Wall Paintings from the Church of St. Elizabeth in Doupov			20/ 0.79		
Jaroslav Kubíček	Survey and Testing of Restoration Options for Damaged Stucco Decorations in the Chapel in Kácov, Including Model Restoration				60/ 2.37	
East Bohemian Museum in Pardubice	Chemical and Technological Examination of the Old Print "Prague Bible" (1488) from the Collections of the East Bohemian Museum in Pardubice				16.5/ 0.65	

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

National Heritage Institute	Chemical and Technological Analysis of Historical Wallpaper Samples in the Interior of the National Cultural Monument Hrádek u Nechanic Chateau				24/ 0.95	
EURODOM, spol. s r.o.	Non-Invasive and Invasive Survey of the Drawing on Paper "Motherhood", Unknown Author, Prague Art Gallery				15/ 0.59	
National Heritage Institute	Restoration Stratigraphic Survey of the Courtyard Medieval Facade of Kunštát Castle and Chateau, Survey of Historical Mortars and Plasters – Phase 3				34.7/ 1.37	
East Bohemian Museum in Pardubice	Restoration Survey of Wall Paintings in the "Coffered Hall" on the Second Floor of Pardubice Chateau				147/ 5.8	
National Heritage Institute	Restoration Survey of Original Painted Decorations in Selected Interiors on the 1st and 2nd Floors of Vizovice Chateau				43.5/ 1.72	
Margaret Brooks Lobkowicz	Restoration Survey of the Sgraffito Decoration on the Northern Exterior Facade of Nelahozeves Chateau					285.7/ 11.2
Chládek a Tintěra for the National Heritage Institute	Survey of Surface Treatments on Chimneys at Litomyšl Chateau to Determine the Conservation Approach					26.2/ 1.1
National Heritage Institute	Restoration and Chemical-Technological Survey of the Presbytery of the Church in Zahrádka					18.4/ 0.72
Municipality of Hradištko	Chemical-Technological and Restoration Survey of Frescoes – Paintings by J. V. Spitzer at Hradištko Chateau					35.4/ 1.4
ARCHATT s.r.o.	Survey of Sgraffito Decorations in the Second Courtyard of Litomyšl Chateau					40/ 1.58
Total		22.9/ 0.9	127/ 5	294/ 11.6	340/ 13.45	405.7/ 16

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:

1. Monograph: *Restoration of Plaster Casts* (London: Archetype Publications, ISBN 9781909492912)^[1]

The book *Restoration of Plaster Casts* is the first comprehensive publication dedicated to the conservation and care of plaster artefacts. Plaster is one of the most important materials in sculpture, used not only for creating reproductions of significant monuments but also for preserving original and highly valuable sculptural works. Plaster sketches and working models often capture an artist's creative process, including the search for an appropriate form and content, alternative design solutions, and interpretations of artistic vision. A methodical and informed approach to conservation and long-term care is essential for preserving these works.

The publication brings together existing research on plaster casts from published sources and supplements it with new findings based on the authors' extensive practical experience and laboratory testing. The book is structured into several thematic sections. The introductory chapters discuss the role of plaster in sculpture and the history of plaster casts. These are followed by chapters outlining the material properties of plaster, types and causes of damage, and approaches to condition assessment, including conservation surveys.

A substantial part of the monograph is devoted to restoration techniques, focusing particularly on cleaning, consolidation, adhesion, and plastic retouching of plaster casts. The final section addresses preventive conservation, providing guidelines for storage and transportation. The appendices include a glossary of damage types and historical techniques used for surface finishes.

This book represents a significant contribution to the understanding and conservation of plaster-based artworks. Its international relevance is reflected in the considerable interest it has generated.

The primary audience for this publication includes heritage institutions, research centres, universities, conservation specialists, and monument preservation organisations, both nationally and internationally.

2. Public Specialist Database: *NUSK – Database of Blind Tooling Decoration on Bookbindings*^[2]

The NUSK database is a textual and visual record of bookbinding tools used for blind tooling (stamps, rollers, and plates) applied to specific manuscripts, incunabula, and early printed books that underwent bookbinding processes in Bohemia in the 16th century.

The database currently contains:

- 3.288 documented tools (1.061 stamps, 1.330 rollers, and 897 plates)
- 4.167 book exemplars

²⁹ See Terms definition.

Users can access textual and visual data through:

- Quick Search, which allows queries based on motif, tool type (stamp, roller, or plate), and dimensions
- Expert Search, a detailed search structured into three specialised modules: TOOLS – WORKSHOPS – EXEMPLARS

The database is bilingual (Czech-German) and is widely used internationally.

Primary users:

- Archives and heritage institutions
- Researchers and academics
- Conservation-restoration specialists

Gender dimension: Access to the database is independent of gender.

3. Specialised Thematic Map: Renaissance and Mannerist Stucco Work in Bohemia and Moravia^[3]

This specialised map provides access to unique Renaissance and Mannerist stucco artworks. It is designed as a catalogue of objects, with records containing:

- Basic information on the origin, authorship, and location of stucco works
- Art-historical descriptions
- Condition assessments
- Technical and material analyses

In addition, the database includes archival records documenting the historical development of the artworks, including previous restoration efforts, supplemented by new findings from recent research. Each catalogue entry is enriched with historical and contemporary photographs, architectural plans, and bibliographic references.

The "Stucco" specialised map is primarily used by:

- Researchers and academics
- Heritage preservation professionals
- Conservation-restoration specialists
- Owners and site managers of stucco artworks
- Municipal and regional authorities

Gender dimension: Access to the database is **independent of gender**.

4. Public Specialist Database: Sculptures and Cities^[4]

The *Sculptures and Cities* database maps and provides a wide range of information on outdoor artworks created in the second half of the 20th century in the Czech Republic. It serves not only as a valuable resource for both professionals and the general public but also as a tool for documenting and protecting these works.

The database covers a diverse array of artistic forms, including sculptures, monuments, reliefs, mosaics, sgraffito, and mural paintings created between the 1950s and the late 1980s. Many of these works are of high artistic quality, often featuring abstract or non-controversial themes produced by internationally recognised European artists. The database also contains a smaller number of graphic works, such as neon signs, pictograms, and information systems for buildings.

Each entry includes:

- Detailed descriptions of various types of public artworks
- Photographic documentation, precise measurements, and exact locations
- Information on authorship, dating, and historical context

- Material specifications, which are essential for planning conservation interventions
- Assessments of the physical condition, including records of previous restorations and damage

The database offers comprehensive and interdisciplinary data, making it a crucial resource for long-term conservation planning while also preserving a precise record of these works at the time of data collection.

The *Sculptures and Cities* database is used by a wide range of stakeholders, including:

- Owners and managers of artworks
- Municipal and regional authorities
- Heritage preservation professionals
- Conservation-restoration specialists
- Researchers and academics
- Associations and civic initiatives focused on public space preservation

Gender dimension: Access to the database is independent of gender.

5. Public Specialist Database: *Czech Mosaics*^[5]

The *Czech Mosaics* database, together with a specialised thematic map, documents outdoor stone and ceramic mosaics across the Czech Republic. It aims to raise awareness among both specialists and the general public about the artistic and historical significance of these works, many of which deserve heritage protection.

A significant number of outdoor mosaics have already disappeared due to mass insulation of building facades, reconstructions, lack of awareness among public authorities and private owners, or neglected maintenance. Many remaining mosaics face serious risks due to insufficient conservation efforts.

The *Czech Mosaics* database has become a key resource for material studies and restoration planning. It also serves as a basis for identifying mosaics that could qualify for heritage protection.

It is **primarily** used by:

- Heritage preservation professionals
- Conservation-restoration specialists
- Researchers and academics
- Municipal and regional authorities

Gender dimension: Access to the database is independent of gender.

6. Set of Utility Models for Special Inorganic Binders^[6]

The developed set of special inorganic binders includes:

- Inorganic binder for lime-cement mortar repairs (Application No. 2020-37989)
- Inorganic geopolymer binder for concrete substrate repairs (Application No. 2020-37987)
- Inorganic geopolymer binder for interior concrete substrate repairs (Application No. 2020-37990)
- Inorganic geopolymer binder for stone substrate repairs (Application No. 2020-37991)

These binders were designed for the restoration of 20th-century architectural surfaces, including lime-cement mortars, plasters, concrete, and stone in both exterior and interior environments.

The technical solution lies in the development of a repair material that meets the specific aesthetic and physical requirements of historical substrates while ensuring compatibility in terms of appearance, processing properties, and material characteristics. The material properties were

determined based on a detailed study of their workability and final performance, including practical application testing.

These newly developed materials offer an additional option for repairing damaged architectural surfaces in both historical and contemporary buildings.

Potential users include:

- Conservation-restoration specialists
- Construction firms specialising in heritage building restoration

A significant feature of these binders is the incorporation of geopolymers produced partly from industrial waste materials, specifically from shale processing. Additionally, using geopolymers instead of Portland cement significantly reduces the carbon footprint associated with binder production, contributing to more sustainable conservation practices.

Gender dimension: The use of these binders is independent of gender.

7. Heritage Conservation Procedure: *Restoration of Glass Mosaics in Epoxy Bedding*^[7]

This methodology was developed to address the specific challenges associated with restoring glass mosaics from the second half of the 20th century. These mosaics represent an important part of the cultural heritage of their time, characterised by an unconventional technological approach, in which epoxy resin was used as a bonding agent for mosaic tesserae or as part of the support structure.

The methodology provides a comprehensive set of measures and techniques that enable the preservation and restoration of these mosaics while respecting their original construction method and technological uniqueness.

The newly introduced mosaic mounting system:

- Eliminates the shortcomings of the original technology while preserving its historical value
- Ensures the stability of materials used in conservation-restoration
- Reduces the weight of the mosaic, facilitating handling and transport
- Enhances reversibility, allowing future modifications or a closer return to the original state

By extending the lifespan of the mosaics, this method also prolongs the interval between conservation interventions. The approach has already been successfully applied in the conservation of several mosaics and has been designed for broader implementation in similar cases.

The procedure is primarily used by:

- Heritage preservation institutions in the Czech Republic
- Conservation-restoration specialists
- Other entities responsible for the management or conservation of glass mosaics

Gender dimension: The methodology is independent of gender.

8. Heritage Conservation Procedure: *In Situ Restoration of Glass Mosaics*^[8]

This certified conservation methodology focuses on the conservation-restoration of glass mosaics set in mortar bedding directly at their existing location (*in situ*). This approach is particularly relevant in cases where removing the mosaic for conservation-restoration in a studio is impractical or inappropriate. The methodology considers both technological and heritage ethics aspects, offering applicable procedures for similar mosaics across the Czech Republic and potentially abroad.

The method has been successfully applied to four outdoor mosaic projects, each featuring different types of glass tesserae and mortar compositions. These case studies provided valuable insights for

developing general methodological recommendations for conservation-restoration of this type of mosaic.

The procedure addresses:

- Mechanical damage to mosaic elements, including cracks, missing parts, and loose glass components
- Degradation of mortar bedding due to erosion, loss of cohesion, or chemical influences
- Selection of conservation-restoration materials and techniques that ensure long-term durability and minimise the need for future interventions

This approach represents a significant contribution to heritage conservation, as it enables the preservation of authenticity, historical and aesthetic values, and structural integrity of restored mosaics.

The procedure is primarily used by:

- Heritage preservation institutions in the Czech Republic
- Conservation-restoration specialists
- Other entities managing or owning glass mosaics

Gender dimension: The methodology is independent of gender.

9. Certified Methodology: *Care and Conservation of Plaster Casts*^[9]

This certified methodology provides a comprehensive set of conservation guidelines for the professional care of plaster casts. Plaster casts form a significant part of museum and gallery collections and represent an important component of cultural heritage. These models preserve the ideas, alternative designs, and sculptural concepts of renowned artists throughout the history of sculpture.

This methodology is the first complete set of conservation measures and best practices aimed at ensuring the long-term preservation of plaster casts, both in the Czech Republic and internationally.

Its primary objectives include:

- Establishing guidelines for the transport, storage, and display of plaster casts
- Defining fundamental criteria for condition assessment and conservation
- Enhancing preservation standards, which will extend the lifespan of plaster casts, optimise maintenance costs, and reduce the financial burden of future restoration interventions through proper handling and storage

This methodology is primarily used by:

- Museum and collection institutions
- Heritage conservation organisations in the Czech Republic
- Conservation-restoration specialists
- Other institutions responsible for the management and preservation of plaster artworks

Gender dimension: The methodology is independent of gender.

10. Heritage Conservation Procedure: *Comprehensive Approach to the Survey of Stucco Artworks*^[10]

This certified methodology provides a structured and methodologically sound approach to conducting qualified surveys of stucco artworks and decorative stucco craftsmanship, in line with current requirements and standards in heritage conservation.

The methodology offers:

- A clear and detailed framework for conducting comprehensive stucco surveys
- An interdisciplinary perspective, demonstrating how well-conceived research contributes to a deeper understanding of stucco works
- Key foundations for planning and implementing conservation, restoration, or preventive measures

A well-executed stucco survey serves as a critical reference for:

- Economically efficient restoration efforts
- Extending the interval between restoration cycles
- Ensuring the long-term preservation of the artwork

By enhancing the understanding and conservation of stucco art, this methodology is valuable to both professionals and the wider public, including:

- Heritage property owners
- Architects and heritage conservation professionals
- Art historians
- Restorers and decorative arts specialists

The methodology's broader societal impact stems from its diverse user base. The restoration of stucco decorations raises awareness of cultural heritage value, supports public engagement and appreciation, and enhances the visibility and attractiveness of previously overlooked historical sites, contributing to cultural tourism and regional development.

The methodology is primarily used by:

- Researchers and academics
- Heritage preservation institutions
- Conservation-restoration specialists

Gender dimension: The methodology is independent of gender.

HTML Links to additional documentation:

- [1] [Conservation of Plaster Casts](#)
- [2] [NUSK - Database of Blind Tooling Decoration on Bookbindings](#)
- [3] [Specialized map with professional content | Stucco](#)
- [4] [Sculptures and Cities - database of works from the 1950s - 1980s](#)
- [5] [Czech mosaics-specialized database and map](#)
- [6] [New Composite Materials for Restoration of Buildings of 20th Century Architecture | Univerzita Pardubice](#)
- [7] [Restoration of glass mosaics in epoxy bedding](#)
- [8] [In situ Restoration of Glass Mosaics](#)
- [9] [Care of plaster castings](#)
- [10] [Renaissance and Mannerist Stucco Work on Czech and Moravian Territory | Univerzita Pardubice](#)

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

Type of result ³⁰	Year of application	Name
Scholarly Monograph	2023	Conservation of Plaster Casts
Specialised Public Database	2023	NUSK – Database of Blind-Tooling Decoration on Bookbindings (CZ/DE)
Specialised Map with Expert Content	2022	Renaissance and Mannerist Stucco Work in Bohemia and Moravia
Specialised Map with Expert Content	2019	Sculptures and Cities
Specialised Map with Expert Content	2020	Czech Mosaics: A Map of Exterior Wall-Mounted Stone and Ceramic Mosaics in the Czech Republic
Utility Model	2020	Set of utility models: Inorganic Binder for Mortar Mixes Used for Filling Lime-Cement Mortars and Plasters Inorganic Geopolymer Binder for Filling Stone Substrates Inorganic Geopolymer Binder for Filling Concrete Substrates Inorganic Binder for Mortar Mixes Used for Filling Interior Concrete Substrates
Heritage Conservation Procedure	2019	Restoration of Glass Mosaics Set in Epoxy Bedding
Heritage Conservation Procedure	2019	In Situ Restoration Methods of Glass Mosaics
Certified Methodology	2020	Care of Plaster Casts
Heritage Conservation Procedure	2023	Comprehensive Approach to the Examination of Stucco Works

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 collaborates on the transfer of research results into practice with the University-wide Centre for Technology and Knowledge Transfer, which supports and develops the application of knowledge and technologies and provides the Faculty with methodological assistance.

The Faculty maintains strong ties with the users of its research results and actively seeks new opportunities for collaboration, reaching out to new partners and establishing long-term cooperation, including framework agreements with key institutions such as the National Heritage Institute and other organisations. A particularly important partner is the German company IBZ-Salzchemie GmbH & Co. KG, Freiberg, Germany.

As part of the SGS project (SGS_2020_019) titled "Development of Modified Protective Lime-Based Coating Systems with Increased Resistance to Microbiological Colonisation", the Faculty developed and systematically tested lime-based coatings with photocatalytic properties. Based on favourable laboratory and long-term field test results, discussions are currently underway with the company regarding the commercial application of these coatings^[1].

Given the nature of the Faculty's activities, the primary means of transferring research results into practice is through contract research and complementary activities. A significant proportion of research and collaboration with industry is conducted through conservation and technological surveys as well as the restoration of artistic and decorative works across the Czech Republic. This work is closely integrated into the teaching process, enhancing students' professional training and is conducted both on a paid basis and, in some cases, without financial compensation.

During the evaluation period, one of the **most significant examples of contract research** was the "Survey of the Sgraffito Decorations and Stone Facade of Nelahozeves Castle". The project was notable for its scope, multidisciplinary approach, and contribution to the restoration planning of Nelahozeves Castle^[2].

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.

Other **key contract research projects** include:

- "Material Research and Testing of Materials for the Restoration of the Epoxy Facsimile of the Allegory of Generosity at Kuks Hospital"^[4]
- "Petrification of Wooden Components from a Well – Archaeological Discovery in Dolní Roveň"^[5]
- "Survey and Testing of Restoration Techniques for Damaged Stucco Decorations in the Chapel of Kácov, Including a Model Restoration"^[3]

These projects are exceptional in terms of the significance of the artefacts, the complexity of the restoration processes, and the challenges involved.

The primary users of these research results include:

- Institutions with long-term collaboration with the Faculty
- Heritage-focused organisations, including:
 - Museums and memory institutions
 - Methodological and executive heritage institutions in the Czech Republic
 - Restoration specialists
 - Owners and managers of cultural heritage sites

The Faculty also maintains long-term collaboration with practising conservators, including its own graduates, across both research and education. Among its key institutional partners, the Faculty works closely with the National Heritage Institute, the National Archives, and the National Library.

HTML Links to additional documentation:

[1] [Development of Modified Protective Lime-Based Coating Systems with Increased Resistance to Microbiological Colonization](#)

[2] [Restoration survey of the sgraffito decoration of the outer northern facade of the Nelahozeves Castle](#)

[3] [Survey and Testing of Restoration Techniques for Damaged Stucco Decoration in the Chapel of Kácov, Including a Model Restoration](#)

[4] [Material Research and Testing of Materials for the Restoration of the Epoxy Facsimile of the Allegory of Generosity at Kuks Hospital](#)

[5] [Petrification of Wooden Components from a Well - Archeological Discovery in Dolní Roveň](#)

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
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Total					

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 of Restoration actively supports and develops **public engagement activities**, which serve to:

- Inspire both the general public and experts to take an interest in and care for tangible cultural heritage
- Raise awareness of the Faculty's research and professional activities
- Increase collaboration with professional institutions on both academic and outreach projects
- Attract more applicants from secondary schools and universities to study at the Faculty
- Enhance the employability of graduates by strengthening the Faculty's links with potential employers
- Support tourism in Litomyšl by organising guided tours of the Faculty's premises for individual visitors, schools, and employee groups
- Increase the prestige of the University of Pardubice

The Faculty presents its **research, creative, and professional activities** through both:

- **In-person engagement**, including:
 - Attendance at outreach events and presentations, both within and beyond the Faculty (e.g., at secondary schools or partner institutions)
 - Organisation of guided tours and open days
 - Educational courses for both the general public and professionals
 - Presentation of research and creative outputs at conferences and other professional meetings
- **Remote communication**, including:
 - Social media outreach
 - Web presentations on the Faculty and University websites
 - Coverage in local, regional, national, and international media
 - Printed publications and press releases

The Faculty's **main target audiences** for these activities include:

1) Secondary school and university students

Key activities for this group include:

- Guided tours of the Faculty and its specialist workshops
- Art technique courses, such as the "Summer School"
- Open Days, offering consultations on applicants' creative work
- Presentations at selected educational institutions
- Colloquia, where Faculty students and students from other universities showcase their creative projects (e.g., *Museums, Monuments, and Conservation*)
- Participation in Figurama, an event bringing together students from art schools and faculties

2) General public (domestic and international)

Key activities for this group include:

- Popular outreach events organised by the Faculty or the University
- Participation in University-wide events, such as:
 - Sports Park
 - Science and Technology Fair
 - Gaudeamus Education Fair (Brno, Prague)
 - Exhibitions at the University Gallery, curated by Professor Tomáš Lahoda
- Faculty-led activities, including:
 - Guided tours of the Faculty and its specialist workshops
 - Art technique courses, such as the "Summer School"
 - Participation in *Smetana's Litomyšl Art Festival*, where academic staff exhibit their works
 - Presentation of research and creative outputs through:
 - Traditional media (radio and TV reports)
 - Online platforms and social media (*Faculty and University websites, Facebook, Instagram, LinkedIn*)
 - Press releases and articles in print media

3) Professional community (domestic and international)

Key activities for this group include:

- Educational programmes within Lifelong Learning (LLL)
- Professional visits and international exchanges for academic staff, PhD candidates, and master's programme students
- Consultancy services for professionals
- Collaboration on analytical studies and conservation plans
- Publication opportunities in the Faculty's professional journal, *e-Monumentica*
- Alumni gatherings

4) Professional partner institutions (national and international)

Key activities for this group include:

- Regular meetings to exchange expertise
- Joint preparation of research, scientific, and outreach projects
- Student internships at partner institutions
- Restoration and technological projects commissioned by partner organisations
- Involvement of external experts from partner institutions in:
 - Specialist teaching
 - Consultations on conservation and restoration projects
 - Research collaborations and publishing activities
 - Ensuring the academic quality of the Faculty's study programmes

Selected Examples of Public Engagement and Science Communication Activities (2019–2023)

1) Specialist Excursions for Secondary School and University Students

The Faculty of Restoration collaborates with numerous secondary schools and universities, offering their students guided visits to its specialist workshops, including expert explanations of the activities conducted at the Faculty. These excursions, which typically last several hours, are often integrated into outdoor study programmes of technical or artistic secondary and higher education institutions. Each year, approximately twenty schools from across the Czech Republic and Slovakia take part in these excursions, with an estimated total participation exceeding 400 individuals.

The primary objectives of these excursions are:

- Raising public awareness of conservation and restoration practices
- Attracting potential applicants for Faculty study programmes (primarily secondary school and some university students)
- Establishing future collaborations with students in architecture and civil engineering fields for professional projects

2) Open Days

At least once a year, the Faculty organises an Open Day, providing an opportunity to introduce the Faculty's specialist activities to the public, potential applicants, and their parents. One of the most effective elements of these events has been offering consultations on applicants' creative portfolios, helping them prepare for the admissions process.

On average, each Open Day attracts around 250 visitors from across the Czech Republic and Slovakia, including 80–90 potential applicants.

3) Faculty and University-Wide Science and Education Outreach Events (for the General and Professional Public)

Each year, the Faculty participates in educational outreach programmes at selected secondary schools, presenting its study opportunities and creative activities.

- At general secondary schools (gymnasias), presentations are targeted at students specialising in visual arts and art history.
- At technical and vocational secondary schools, presentations are delivered to senior students.
- On average, five visits are conducted annually, engaging approximately 250 secondary school students.

The Faculty also regularly participates in University-wide public engagement events, where it presents its research, creative, and professional activities in an interactive and accessible format to a broad audience.

Key events include:

- European Researchers' Night^[1]
- Science and Technology Fair
- Sports Park Pardubice
- Gaudeamus Education Fair (Prague and Brno)

These events attract thousands of visitors from the general and professional public, including all age groups.

4) Summer School of Art Techniques

Each July, the Faculty organises a specialist course aimed at individuals wishing to enhance their artistic skills. Participants improve their drawing, modelling, and painting techniques and increase their chances of success in the admissions process (if they are also prospective applicants).

The Summer School is structured into three separate modules:

- Beginner module – focused on drawing and modelling
- Intermediate module – focused on painting

The target audience includes secondary school students and the general public. Each year, approximately 20 participants take part in the Summer School.

5) Lifelong Learning Courses

The Faculty systematically offers Lifelong Learning (LLL) courses, targeting civil servants, restorers, museum and gallery professionals, and the general public. These courses cover fundamental conservation principles in areas such as:

- Stone monuments
- Wall paintings and sgraffito
- Paper-based artworks and book conservation
- Archaeology and historical surveys

Faculty experts also lecture at external courses organised by institutions such as AINOVA and the University of the Third Age (U3V) at the Municipal Library in Litomyšl.

The Faculty also engages with professionals through the Heritage Train I/II project, which aims to develop a modular Lifelong Learning system for heritage conservation.

Courses, Faculty involvement, and LLL information are actively promoted via the Faculty's website and social media as well as direct outreach to target groups, such as institutions and professionals who may benefit from these courses.

6) Museums, Heritage, Conservation Conference

This specialist student conference brings together bachelor's, master's, and doctoral students in the fields of conservation and restoration of cultural heritage objects, including scientific material research in this area.

The conference provides an opportunity for students to present their research and professional activities, while also gaining first-hand experience of academic conferences – from delivering presentations to engaging in professional discussions.

Beyond academic exchange, the event fosters:

- Knowledge-sharing on conservation practices across different universities
- Networking and future collaborations among students and experts

The conference is jointly organised by the Faculty of Restoration, University of Pardubice, and the Institute of Chemical Technology in Conservation at the University of Chemistry and Technology, Prague (VŠCHT). It took place in Litomyšl in 2019 and 2022.

7) *e-Monumentica* Journal

e-Monumentica is a scholarly journal dedicated to interdisciplinary collaboration in the protection and conservation of cultural heritage.

The journal serves as a shared platform for contributions from various disciplines and professional fields, including:

- Art history and museology
- Conservation and restoration
- Heritage technologies and management
- Architectural conservation and construction
- Aesthetics, economics, and cultural heritage management

While the journal publishes specialist research, it also emphasises interdisciplinary approaches that contribute to the broader understanding of cultural heritage conservation.

Available in both print and electronic formats, *e-Monumentica* reaches hundreds of professionals in conservation, visual arts, art history, and cultural heritage studies, as well as students in these and related disciplines.

8) Media Coverage of Faculty Activities

A crucial aspect of the Faculty's outreach is its communication with both the general public and professionals through audiovisual media.

The Faculty produces a range of specialist, educational, and documentary media outputs, many of which can be viewed on the Faculty's website in the information section. Additionally, FR activities frequently appear in news media, both national and international, reaching thousands of people interested in cultural heritage conservation.

Numerous activities have been featured in both national and international media. Notable projects include the Conservation of an ancient well^{[2],[3]}, restoration efforts at St. Stephen's Cathedral in Vienna^[4], the preservation of the Hodějovský Family epitaph in Český Rudolec, and the international project "Concept for Preventive Conservation, Securing, and Preservation of the Mural Painting Cycle in the Cloister of the Emmaus Monastery in Prague."

9) Organisation of Exhibitions, Participation in External Exhibitions, and Public Outreach by Faculty Staff

The Faculty of Restoration maintains and continuously updates its permanent exhibition showcasing the creative activities of its specialist studios in the cloister of the Piarist College. This exhibition primarily presents notable projects from the Faculty's disciplinary studios, in close collaboration with the Studio of Fine Art Preparation, the Department of Chemical Technology, and the Department of Humanities.

The Studio of Fine Art Preparation organises regular student exhibitions, such as "(O)kraje", open to both the general and professional public, as well as exhibitions featuring core faculty members and guest artists at the Red Tower in the FR complex.

The Faculty also actively participates in the Smetana's Creative Litomyšl festival, where it curates and contributes to exhibitions. A notable example is "Grafika mezi námi" (Graphics Among Us), held between May and September 2019 as part of Smetana's Creative Litomyšl festival. Faculty members regularly exhibit their artworks at the City Gallery Litomyšl – House of the Knights, with Tomáš Lahoda participating in 2019, 2020, 2021, and 2022, and Petr Hošek in 2020 and 2021.

FR faculty members also display their works in domestic and international exhibitions, either as solo exhibitions or as part of group showcases. For instance, Tomáš Lahoda's notable exhibitions include:

- **2019:** Solo exhibition at Futura Centre for Contemporary Art, Prague – *Ad Paintings, Book Paintings, Genre Paintings, La Guardia*
- **2020:** Solo exhibition at Galerie Am Schwarzen Meer, Bremen, Germany – *La Guardia*

- **2023:** Installation *The Nude* at the National Gallery Prague

Meanwhile, Petr Hošek has exhibited:

- **2019:** *Sculpture 2*, Plzeň City Gallery
- **2020:** *Untitled*, Gallery of Fine Arts Náchod
- **2022:** *Frame*, 3M Festival, Prague
- **2023:** Solo exhibition *Reflection*, Gallery Dům, Broumov

Faculty restorers actively present their restoration work to both the general public and experts. A notable example is a lecture on the restored sections of Nelahozeves Castle, delivered to the Lobkowicz family at the Lobkowicz Palace in Prague on 11 December 2023. Another key event was the exhibition of restored plaster models by sculptor Stanislav Sucharda, held at the National Gallery in Prague (*Stanislav Sucharda 1866–1916: The Creative Process*, from 15 November 2019 to 25 October 2020). The Faculty also organised an online colloquium on the restoration of the epitaph of the Hodějovský family in Český Rudolec on 11 May 2021.

FR staff also engage in popular science lectures. For example, Ivan Kopáček regularly delivers lectures at the Association of Czech Bookbinders, such as his 23 September 2023 presentation in Uherský Brod on *Blind Tooling Decoration on Bookbindings*.

10) 30 Years of Conservation Education in Litomyšl and Alumni Gathering (22 April 2023)

To celebrate 30 years of conservation education in Litomyšl, the Faculty of Restoration opened its doors to the public, including its studios in Jiráskova Street and the Piarist College at Castle Hill.

Visitors had the unique opportunity to explore the Purgatory Chapel, an 18th-century landmark restored by FR students and conservation specialists.

In addition to presenting the Faculty's academic and research activities, FR also hosted a gathering of alumni, providing a valuable space for sharing professional experiences, networking, and fostering future collaborations.

HTML Links to additional documentation:

[1] <https://www.upce.cz/predesle-rocniky>

[2] [This 7,000-year-old well is the oldest wooden structure ever discovered, archaeologists say](#)

[3] [This Czech Well May Be the World's Oldest Wooden Structure](#)

[4] [UPCE Restorers working on St. Stephen's Cathedral in Vienna](#)

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, the **International Evaluation Panel** assessed the Faculty of Restoration as a respected educational and research institution at both the national and international levels, contributing to the advancement of cultural heritage protection in the Czech Republic and abroad. The Faculty's activity and success in securing funding and implementing research projects and creative activities were also rated positively.

Regarding the evaluation criteria for applied research projects, income from non-public sources, applied research outputs, collaboration with industry, and dissemination of research results, the Faculty of Restoration was rated very good to excellent.

The evaluation of applied research outputs with a non-economic societal impact and recognition by the international research community – measured through faculty members' participation in international scientific committees, editorial boards of international scientific journals, and invited lectures – was rated as good.

However, contract research, technology transfer, and intellectual property protection were rated below average.

Overall, the research and development (R&D) activities of the Faculty of Restoration in the past period were evaluated as average, with the Faculty being recognised as a high-quality and specifically focused component of the university, demonstrating significant societal impact potential through its research activities. The Faculty's strengths included its active strategy in applied research and its interdisciplinary approach to addressing complex research challenges in cultural heritage conservation. The weaker areas identified were the lack of contract research, absence of a strategy for supporting spin-off companies, and low commercialisation of research outputs. The panel also recommended strengthening the Faculty's integration within the University of Pardubice and enhancing its international recognition.

The **recommendations and assessments** outlined in the International Evaluation Panel's report for the previous evaluation period served as a **key basis for defining the Faculty of Restoration's R&D strategy** for the current evaluation period. A particularly valuable finding was the positive perception of the Faculty's fundamental research and teaching strategy, which is based on interdisciplinary collaboration in investigating and solving complex issues related to cultural heritage conservation.

The Faculty continues to pursue its **long-term research and educational strategy**, grounded in a dialogue between the arts, natural sciences, and humanities, as well as multidisciplinary principles of heritage conservation. It has strengthened national and international research collaborations, including the preparation and implementation of applied research projects.

To enhance **international recognition**, the Faculty has undertaken several key initiatives, including academic publishing, active participation in international projects, invited lectures abroad, and new partnerships with foreign institutions, such as École Nationale Supérieure de Conservation et de Restauration des Biens Culturels in Tipasa, Algeria, and Western Galilee College in Akko, Israel. Additionally, Dr. Vojtěchovský's appointment to the leadership of ENCoRE (*European Network for Conservation-Restoration Education*) further strengthened the Faculty's international standing.

The Faculty's visibility on the international stage was also increased through media coverage in international outlets such as CNN and ORF.

In recent years, the Faculty of Restoration has intensified **collaboration with other research departments** at the University of Pardubice. Notable examples include a long-term research project on the use of biolatex in partnership with the Faculty of Chemical Technology, participation in the international project "Activating Participants Through Social Networks and Gamification in Undertourism Areas" (EEA Funds) in cooperation with the Faculty of Informatics and Electrical Engineering, and involvement of Faculty of Arts and Philosophy researchers in the project "Cemetery Memory".

Significant efforts have also been directed toward improving the **commercialisation of research and creative activities**, as evidenced by contract research outcomes and strategic cooperation with the university's Centre for Technology and Knowledge Transfer (CTKT). However, the nature of the Faculty's activities limits opportunities for establishing spin-off companies or other forms of commercialisation in cooperation with the manufacturing sector.

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)
Workshop in Estonia, 2019	3.2	<u>Cleaning methods for wall paintings, architectural surfaces and stone objects</u>
Workshop in Estonia, 2021	3.2	<u>Training in cleaning methods for stone artworks, wall painting and architectural surfaces including evaluation and assessment of the treatment</u>
Workshop in Israel	3.2	<u>Nanomaterials for consolidation of stone and other porous anorganic materials</u>
Lecture in Algeria	3.2	<u>Cleaning methods for wall paintings, architectural surfaces and stone objects - Algeria</u>
Lecture by a foreign specialist prof. Francesca Cappitelli	3.2	<u>Biocleaning and Bioconsolidation - prof. Francesca Cappitelli 2021</u>
Lecture by a foreign specialist Paolo Pastorello	3.2	<u>Retouch course - Paolo Pastorello</u>
Lecture by a foreign specialist dr. Pascal Querner	3.2	<u>Course on integrated insect pest management in collection institutions - Dr. Pascal Querner</u>
Project Information: Restoration of Mosaics	3.3	<u>Conservation of Glass and Stone Mosaics of the Czech Mosaics School</u>
Project Information: Traces of Creation	3.3	<u>TRACES OF CREATION Saving the heritage of great sculptors of the first half of 20th century</u>
Project Information: Blind Witnesses of Time	3.3	<u>Blind witnesses. Blind tooling decoration on bookbindings.</u>
Project Information: Technology of Restoration of Renaissance Sgraffito Plasters	3.3	<u>Technology of Restoration of Renaissance Sgraffito Plasters - tradition and metamorphosis</u>
Project Information: Renaissance and Mannerist Stucco Work in Bohemia and Moravia	3.3	<u>Renaissance and Mannerist stucco work on Czech and Moravian territory</u>
Project Information: Baroque Ceiling Painting between Theory and Practice	3.3	<u>Baroque Ceiling Painting between Theory and Praxis</u>
Project Website: International Project for a Detailed Survey of the So-Called Emmaus Cycle Wall Paintings in Prague	3.3	<u>DBU - Preventive conservation, securing and preservation of the cycle of murals in the Emmaus Monastery in Prague</u>
Project Information: Post-War Art in Architecture – Documentation, Research, and Modern Materials	3.3	<u>Czech Art in the 1950s-1980s in the Public Space: Recording, Research, and Restoration</u>
Project Information: International Cooperation for Professional Training in Heritage Conservation I	3.3	<u>HERITAGE TRAIN II</u>
Project Information: New Composite Materials for Restoration of Buildings of 20 th Century Architecture	3.3	<u>New composite materials for restoration of buildings of 20th century architecture</u>
Conservation of Glass and Stone Mosaics of the Czech Mosaics School	3.3	<u>https://fr.upce.cz/en/fr/conservation-of-glass-and-stone-mosaics-of-the-czech-mosaics-school</u>
Traces of creation	3.3	<u>https://fr.upce.cz/en/fr/traces-of-creation-saving-the-heritage-of-great-sculptors-of-the-first-half-of-20th-century</u>

Blind Witnesses. Blind Tooling Decoration on Bookbindings.	3.3	https://fr.upce.cz/en/fr/blind-witnesses-blind-tooling-decoration-on-bookbindings
Technology of Restoration of Renaissance Sgraffito Plasters - Tradition and Metamorphosis	3.3	https://fr.upce.cz/en/fr/technology-of-restoration-of-renaissance-sgraffito-plasters-tradition-and-metamorphosis
Renaissance and Mannerist Stucco Work on Czech and Moravian Territory	3.3	https://fr.upce.cz/en/fr/renaissance-and-mannerist-stucco-work-on-czech-and-moravian-territory
Baroque Ceiling Painting between Theory and Praxis	3.3	https://fr.upce.cz/en/fr/baroque-ceiling-painting-between-theory-and-praxis
DBU - Concept for Preventive Conservation, Securing and Preservation of the Mural Painting Cycle in the Cloister of the Emmaus Monastery in Prague	3.3	https://fr.upce.cz/en/fr/dbu-preventive-conservation-securing-and-preservation-of-the-cycle-of-murals-in-the-emmaus
Czech Art in the 1950s-1980s in the Public Space: Recording, Research, and Restoration	3.3	https://fr.upce.cz/en/fr/czech-art-in-the-1950s-1980s-in-the-public-space-recording-research-and-restoration
Heritage Train I.	3.3	https://fr.upce.cz/en/fr/httpsfrupceczfrinternational-cooperation-for-professional-training-in-protection-of-monuments
New Composite Materials for Restoration of Buildings of 20th Century Architecture	3.3	https://fr.upce.cz/en/fr/new-composite-materials-for-restoration-of-buildings-of-20th-century-architecture
Monograph	3.4	Conservation of Plaster Casts
Public Specialist Database	3.4	NUSK - Database of Blind Tooling Decoration on Bookbindings
Specialised Thematic Map	3.4	Specialized map with professional content Stucco
Public Specialist Database	3.4	Sculptures and Cities - database of works from the 1950s - 1980s
Public Specialist Database and Map	3.4	Czech mosaics-specialized database and map
Set of 4 Utility Models for Special Inorganic Binders	3.4	New composite materials for restoration of buildings of 20th century architecture
Heritage Conservation Procedure	3.4	Restoration of glass mosaics in epoxy bedding
Heritage Conservation Procedure	3.4	In situ Restoration of Glass Mosaics
Certified Methodology	3.4	Care of plaster castings
Heritage Conservation Procedure	3.4	Renaissance and Mannerist Stucco Work on Czech and Moravian Territory Univerzita Pardubice
Student Research Project	3.5	Development of Modified Protective Lime-Based Coating Systems with Increased Resistance to Microbiological Colonization
Contract research Nelahozeves Castle	3.5	Restoration survey of the sgraffito decoration of the outer northern facade of the Nelahozeves Castle
Contract research The Chapel of Kácov Castle	3.5	Survey and Testing of Restoration Techniques for Damaged Stucco Decoration in the Chapel of Kácov, Including a Model Restoration

Contract research Hospital Kuks	3.5	<u>Material Research and Testing of Materials for the Restoration of the Epoxy Facsimile of the Allegory of Generosity at Kuks Hospital</u>
Contract research Petrification of Wooden Components	3.5	<u>Petrification of Wooden Components from a Well - Archeological Discovery in Dolní Roveň</u>
European Researchers' Night	3.6	<u>https://www.upce.cz/predesle-rocniky</u>
Conservation of an ancient well	3.6	<u>This 7.000-year-old well is the oldest wooden structure ever discovered, archaeologists say</u>
Conservation of an ancient well	3.6	<u>This Czech Well May Be the World's Oldest Wooden Structure</u>
Restoration efforts at St. Stephen's Cathedral in Vienna	3.6	<u>UPCE Restorers working on St. Stephen's Cathedral in Vienna</u>

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: Faculty of Transport Engineering (FTE)

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 mission of the Faculty of Transport Engineering (FTE)^[1] is to educate and train professionals in the field of transport, conduct high-quality scientific research, foster innovation and other creative activities, and contribute significantly to the scientific, cultural, social, and economic development of society. The Faculty's vision is to be a leading institution recognised for its education, research, projects, and expertise in transport, both nationally and internationally.

The FTE specialises in technical, technological, and managerial disciplines within the field of transport. The Faculty is dedicated to enhancing the educational and research activities of its academic staff. Notably, it has been granted institutional accreditation in the field of Transport (as defined by Government Regulation No. 275/2016) for the maximum possible period of 10 years. It has also obtained habilitation and professorship rights in the fields of *Transport Means and Infrastructure* and *Transport Technology and Management*, both for 10 years. Furthermore, it has successfully passed the internal accreditation process for its doctoral study programmes in *Transport Technology and Management* and *Transport Means and Infrastructure* (including their English-language versions) for a period of 10 years. The Faculty strives to respond to current societal developments, the latest scientific advancements, and emerging societal needs. It actively collaborates with partners at regional, national, and international levels, including scientific and academic institutions, industry, alumni, employers, public administration, the non-profit sector, and the general public.

Research and development activities at the Faculty are conducted through research and innovation projects, including Horizon, OP PIK, OP TAK, TAČR, and sectoral projects funded by the Ministry of Transport, the Ministry of Industry and Trade, and the Ministry of the Interior. The Faculty is also

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

actively involved in extensive contract research and other complementary activities for external entities, such as Škoda Auto, Czech Railways (ČD), the Railway Infrastructure Manager (SŽ), CZ LOKO, the Railway Research Institute (VÚŽ), or DT Výhybkárna a strojárna.

A key research support facility at the Faculty is the Educational and Research Centre in Transport (ERCT)^[2], a unique and highly specialised institution. Its importance lies primarily in its modern laboratories, which facilitate research, particularly in technical disciplines related to transport. The Faculty also plays an active role in the large-scale Josef Božek National Competence Centre for Land Transport Vehicles, which builds on the activities of the Rail Vehicle Competence Centre and focuses primarily on applied research and development in rail vehicle construction and operation. As part of the activities of the Expert Institute at the Faculty of Transport Engineering, expert reports on traffic accidents are prepared and issued.

The Faculty currently conducts predominantly applied research in the following areas:

- **Development, construction, and operation of rail and road vehicles**, vehicle dynamics, including vehicle–track interaction, vehicle operational safety in terms of durability, dynamic strength, and running safety, including accident investigation, as well as the environmental impact of vehicles; material research in the field of transport means and infrastructure. *(Primarily 20104 Transport Engineering, 20301 Mechanical Engineering, 20501 Materials Engineering)*
- **Electromobility and electric traction**, including traction calculations, vehicle energy consumption, energy optimisation of vehicle operation, battery-powered railway and road vehicles, hybrid drives, and traction drive control; **automotive electronics and diagnostics**, including electrical and electronic systems in vehicles, communication within vehicle control units, control unit diagnostics, and parallel diagnostics. *(Primarily 20201 Electrical and Electronic Engineering)*
- **Analysis and diagnostics of transport structures**, fatigue resistance and reliability of bridge structures, and analysis of materials and structures for transport infrastructure. *(Primarily 20101 Civil Engineering and 20102 Construction Engineering, Municipal and Structural Engineering)*
- **Optimisation problems in transport and logistics**, simulation models in transport, development of information systems for railway timetabling, rail capacity allocation systems, web and desktop application programming focused on transport and logistics, and the application of statistical methods in transport. *(Primarily 20104 Transport Engineering and 50703 Transport Planning and Social Aspects of Transport)*
- **Transport policy and mobility visions**, in the context of development trends and the current state; transport management at regional and municipal levels in line with sustainable development principles; management and economics of the electronic communications and postal services sectors; **city logistics** focusing on parcel distribution in accordance with sustainable development principles and the growth of e-commerce; detection, analysis, and prevention of criminal activities in transport and logistics; and research into selected aspects of air transport. *(Primarily 50204 Business and Management and 50703 Transport Planning and Social Aspects of Transport)*

Staffing and Lifelong Learning

The Faculty's staffing levels are quantified in the following tables and are comparable to similarly focused faculties in the Czech Republic. Among academic staff, assistant professors constitute the majority and gradually prepare for habilitation procedures based on their research achievements.

The FTE has approximately **1,300 students** enrolled in a total of **10 bachelor's, follow-up master's, and doctoral degree programmes**. In addition to that, the FTE provides lifelong learning courses.

The Faculty's mission and vision are further elaborated in the **Strategic Plan for Educational and Creative Activities of the Faculty of Transport Engineering, University of Pardubice (2021+)**, including its regular updates and **Annual Reports**.

HTML links to additional documentation:

[1] <https://dfjp.upce.cz/en>

[2] <https://dfjp.upce.cz/en/jptf/erct.html>

Table 3.1.1 - Staffing per FTE²

Academic/ Professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	6.65/1	6.53/1	4.95/1	4.50/1.55	4.38/1.49	27.01/6.04
Associate Professor	22.74/2	22.67/1.67	22.50/1	21.49/1	18.72/0.92	108.12/6.59
Assistant Professor	44.81/11.55	45.90/11.14	47.70/11	48.87/11.5	41.73/8.55	229.01/53.74
Assistant	12.86/1.83	10.38/1.44	11.35/1.75	9.87/1	8.09/1.81	52.55/7.84
R&D Personnel ³						
Researchers in other categories ⁴	7.15/1.33	3.95/1	4.28/1	3.52/0.5	2.44/0.59	21.35/4.42
Technical and economic staff ⁵	14.06/9.93	13.85/9.87	13.59/10.05	13.02/9.92	10.09/8.17	65.52/47.93
Scientific, research and development staff involved in teaching activities						
Early career researchers ⁶	25.35/4.46	22.27/5.23	20.38/4.25	17.89/3.83	12.04/1.86	97.93/19.63
Total ⁷	108.27/27.64	103.29/26.13	104.38/25.79	101.27/25.47	86.36/21.52	503.57/126.55

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							3	1	2		4	
Associate Professor			3		13	1	3	1	3		6	
Assistant Professor			24	3	17	7	5	1	1		1	
Assistant	1	1	9		1		1				1	
R&D Personnel ⁹												
Researchers in other categories ¹⁰	3	1	1		1							
Technical and economic staff ¹¹	2	1	2	2	6	4	6	4			1	
Scientific, research and development staff involved in teaching activities												
Early career researcher ¹²	2	1	23	3								
Total ¹³	6	3	39	5	38	12	18	7	6		13	

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					1		3	2			4	
Associate Professor			1		10		9	1	1		1	
Assistant Professor			15	2	24	4	5	3	2		1	
Assistant			5	2	2		2				1	
R&D Personnel ¹⁵												
Researchers in other categories ¹⁶	1		1	1	1						1	
Technical and economic staff ¹⁷	2	2	1	1	5	4	3	2	1	1	1	
Scientific, research and development staff involved in teaching activities												
Early career researcher ¹⁸	1		11	1								
Total ¹⁹	3	2	23	6	43	8	22	8	4	1	9	

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	863	186	902	185	857	172	868	201	1025	228	4515	972
Master's ²⁰	315	84	340	100	300	94	265	80	234	64	1454	422
Doctoral	69	16	66	21	64	10	51	8	47	10	297	65
Lifelong Learning Courses							12	2			12	2
Total	1246	286	1307	306	1220	276	1183	288	1306	302	6262	1458

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		4/0	1/0	4/0	1/0	4/0	1/0	4/0	1/0	6/0	1/0
Master's	2/0		3/0		3/0		3/0		3/1		5/0	
Doctoral	2/2		2/2		2/2		2/2		2/2		4/2	
Lifelong Learning courses							1/0	1/0			1/0	1/0
Total	6/2		9/2	1/0	9/2	1/0	10/2	2/0	9/2	1/0	16/2	2/0

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

Field of Research	FORD	FORD share [%]	Predominant type of research	Total share of field of reaserch [%]
1. Natural Sciences	1.1 Mathematics	2.6	Applied research	4
	1.2 Computer and information sciences	1.2	Applied research	
	1.3 Physical sciences	0.1	Applied research	
	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	0.1	Applied research	
2. Engineering and Technology	2.1 Civil engineering	34	Applied research	68.8
	2.2 Electrical engineering, Electronic engineering, Information engineering	10	Applied research	
	2.3 Mechanical engineering	13	Applied research	
	2.4 Chemical engineering	0	Zvolte položku.	
	2.5 Materials engineering	10	Applied research	
	2.6 Medical engineering	0	Zvolte položku.	
	2.7 Environmental engineering	1.6	Applied research	
	2.8 Environmental biotechnology	0	Zvolte položku.	
	2.9 Industrial biotechnology	0	Zvolte položku.	
	2.10 Nanotechnology	0	Zvolte položku.	
	2.11 Other engineering and technologies	0.2	Applied research	
3. Medical and Health Sciences	3.1 Basic medicine	0	Zvolte položku.	0.1
	3.2 Clinical medicine	0	Zvolte položku.	
	3.3 Health sciences	0.1	Applied research	
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	0.1	Applied research	27.1
	5.2 Economics and Business	13	Applied research	
	5.3 Education	1.4	Applied research	
	5.4 Sociology	0.1	Applied research	
	5.5 Law	0	Zvolte položku.	
	5.6 Political science	0	Zvolte položku.	
	5.7 Social and economic geography	12	Applied research	
	5.8 Media and communications	0.5	Applied research	
	5.9 Other social sciences	0	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:

The academic staff and students at the Faculty of Transport Engineering (FTE)^[1] actively engage with the research community. Selected examples of their contributions are presented in the following tables and commentaries.

A significant recognition was the Minister of Education, Youth and Sports Award for Outstanding Teaching at a Higher Education Institution in 2021, granted to Ing. Dalibor Gottwald, Ph.D. This award acknowledged his exceptional educational activities, taking into account his successful leadership of the TAČR ZÉTA project *"Setting New Educational and Training Priorities Reflecting the Changing Needs of the Labour Market in the Transport and Communications Sector"*, and the application of the project's findings in the teaching process.

Another prestigious achievement is the elected membership of doc. Ing. Özgür Yurdakul, Ph.D. in the International Federation for Structural Concrete (fib) committees *Task Group 5.1 – FRP Reinforcement for Concrete Structures* and *The fib Young Members Group*, where he also actively contributes to the development of European standards for concrete structures design. Additionally, doc. Yurdakul is a full member of the Earthquake Engineering Research Institute (EERI, Oakland, California, USA) and was awarded the Rector's Award for Young Scientists under 35 by the University of Pardubice in 2021 for his contributions.

Prof. Ing. Tatiana Molková, Ph.D. was a member of the Scientific Steering Group of Shift2Rail (2015–2021), while since 2023, doc. Ing. Ladislav Řoutil, Ph.D. has been an elected member of the Scientific Steering Group of the Europe's Rail Joint Undertaking, both of which are European partnerships for rail research and innovation established under the Horizon programme. Furthermore, doc. Ing. Petr Nachtigall represents the FTE in high-speed rail matters within the International Union of Railways (UIC).

Representatives of the FTE also serve on scientific boards of other universities and faculties. Currently, doc. Ing. Libor Švadlenka, Ph.D. is a member of the Scientific Board of the Czech Technical University in Prague (ČVUT) and the Scientific Board of the Faculty of Transportation Sciences, CTU in Prague, while doc. Ing. Ladislav Řoutil, Ph.D. is a member of the Scientific Board of the Faculty of Civil Engineering at VŠB-TU Ostrava.

Many colleagues from the FTE are members of professional organisations. Notable examples include:

- Ing. Dušan Čermák, Ph.D., who serves as the Chairman of the Pardubice Branch of the Union of Czech Mathematicians and Physicists and is a member of its Supervisory Board.

- Ing. Vítězslav Krčmář, Ph.D., who is a Committee Member of the Microwave Technology Expert Group of ČES z.s. and helps organise specialist seminars on microwave technology for both professionals and the general public.
- Prof. Ing. Vladimír Schejbal, CSc., who is a Senior Member of IEEE.
- Prof. Ing. Eva Schmidová, Ph.D., who has long been a member of the Programme Committee of the Personnel Certification Centre for Nondestructive Testing at Czech Railways (ČD, a.s.).
- Doc. Ing. Ladislav Řoutil, Ph.D., who has been a member of the International Association for Life-Cycle Civil Engineering (IALCEE) since 2014.

Several FTE members also contribute to the activities of the Technology Platform "Interoperability of Railway Infrastructure"^[2], its working groups, and the Czech Society for Mechanics.

Additionally, faculty members participate in the evaluation of research projects in various programme calls and serve as peer reviewers for scientific journals. For instance, doc. Ing. Özgür Yurdakul, Ph.D. has reviewed 76 papers in impact-factor journals.

HTML links to additional documentation:

[1] <https://dfjp.upce.cz/en>

[2] <https://www.sizi.cz/home>

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
Dalibor Gottwald, Ing., Ph.D.	Minister of Education, Youth and Sports Award for Outstanding Teaching at a Higher Education Institution (2021)	Ministry of Education, Youth and Sports (MEYS)
Özgür Yurdakul, Ing. Ph.D.	Rector's Award for Young Scientists Under 35 (2021)	University of Pardubice
Michal Lokvenc, Ing.	Emil Škoda Award (4th place)	Škoda Group in collaboration with the CTU Media Lab Foundation
Ladislav Řoutil, doc. Ing. Ph.D.	Top 3 Innovations of the Pardubice Region 2024	P-PINK – Pardubice Business Incubator

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
Jaroslav Matuška, doc. Ing. Ph.D.	International Journal for Traffic and Transport Engineering, City Net Scientific Research Center Ltd. Belgrade, Serbia, ISSN 2217-5652
Jaromír Široký, doc. Ing. Ph.D.	International scientific journal Transport Technic and Technology, ISSN 2585-8084
Petr Průša, doc., Ing., Ph.D.	Promet, University of Zagreb, Zagreb, Croatia, ISSN 1848-4069
Libor Švadlenka, doc., Ing., Ph.D.	International Journal for Traffic and Transport Engineering, Faculty of Transport and Traffic Engineering, University of Belgrade, Serbia, ISSN 2217-544X
Jiří Křupka, doc., Ing., PhD.	Scientific Journal of Polonia University, the Publishing House of Polonia Academy "Educator", Chenstohovo, Poland, ISSN 2957-1898
Radovan Soušek, prof. Ing., Ph.D.	Journal of Traffic and Transportation Engineering, David Publishing Company, USA, ISSN 2328-2142
Ladislav Řoutil, doc. Ing., Ph.D.	Journal of Advanced Transportation, Guest Editor, ISSN 2042-3195 Construction of Optimised Energy Potential, Scientific Board, ISSN 2299-8535
Petr Voltr, doc. Ing., Ph.D.	Railway Engineering, 2149-1607 / 2687-2463
Eva Schmidová, prof. Ing., Ph.D.	Railway Engineering, 2149-1607 / 2687-2463
Vladimír Schejbal, prof. Ing., CSc.	Advances in Electrical and Electronic Engineering ISSN: 1336-1376

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 Vojtek, Ing. PhD.	Public Transport in Central Europe	Vilnius Gediminas Technical University, Lithuania	2023
Tatiana Molková, prof. Ing. Ph.D.	Railway Transport as a Key Element of the Transport System in the Czech Republic	TU Berlin, Eisenbahnwesen-Seminar	2023
Jaromír Široký, doc. Ing. Ph.D.	The Intermodal Transport Between Czech Republic and European Union	University of Bremen	2023
Dalibor Gottwald, Ing., Ph.D.	Human Capital in Transport and Communications: Multi Criteria Decision-making Approach in Personnel Selection Problem – Case Study in Transport and Communications	University of Zagreb, Faculty of Transport and Traffic Sciences	2022
Jan Chocholáč, Ing., Ph.D.	Sustainable Logistics – Current Trends and Examples of Good Practices	University of Zagreb, Faculty of Transport and Traffic Science	2023
Tomáš Michálek, Ing. Ph.D.	Traction Mechanics	Politecnico di Milano, Rolling Stock Summer School 2023	2023
Eva Schmidová, prof. Ing. Ph.D.	Analysis of the Sensitivity of IF Steel to Localisation of Plasticity Using the EWF Methodology	UCLouvain, Louvain-la-Neuve, Belgium	2022
Pavel Lopour, Ing. Ph.D. Vladislav Borecký, Ing. Ph.D.	Non-destructive Diagnostics of Transport Structures Using Ground Penetrating Radar (GPR)	Gdańsk University of Technology	2023
Jiří Kulička, Mgr. Ph.D.	Using Numerical Methods in Engineering	Anadolu University, Eskişehir	2019
Stanislav Machalík, Ing. Ph.D.	Artificial Intelligence in Programming	University of Maribor	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
Martijn Kiers, Ing.	FH Joanneum – University of Applied Sciences, Kapfenberg	Sustainable Mobility in Smart Cities	2023
Borna Abramovic, prof.	University of Zagreb, Croatia	From Private Car to Public Transport	2023
Rasa Bražulienė, Ing.	Vilnius Gediminas Technical University, Lithuania	Climate Change Challenges in Mobility	2023
Ján Ondruš, doc. Ing., PhD.	University of Žilina, Slovakia	Road Traffic Safety	2023
Gunter Löffler, prof. Dr.-Ing.	TU Dresden	Solution for the Operational Reliability of Trams	2021
Prof. Zbigniew Łukasik	Kazimierz Pulaski University of Technology and Humanities in Radom	Information Processing in Control and Management Systems	2021
Carmine Moliterno	University of Naples Federico II, Department of Civil, Architectural and Environmental Engineering (UNINA)	Seismic Performance of a Reinforced Concrete Building Retrofitted with Self-Centering Shape Memory Alloy Braces	2023
Jacek Szmagliński	Gdańsk University of Technology, Transportation Engineering Department	Modernisation of Tram Lines in Gdańsk	2023
Salih Serkan Artagan	Eskişehir Technical University	GPR-Based Estimation of Concrete Strength Changes Under Extreme Temperature Exposure	2021
Melda Küçükdemirci	Istanbul University-Cerrahpaşa	The Use of GPR and Other Geophysical Methods in Transport Engineering	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 project/programme research call	Name of the authority/guarantor of the contracting of the project/programme call	Year
Libor Švadlenka, doc. Ing., Ph.D.	Transport 2020+ and Transport 2030+	Technology Agency of the Czech Republic (TAČR) – Member of the Expert Collegium	2020-2023
Dalibor Gottwald, Ing., Ph.D.	SIGMA – DC1 and DC3, Environment for Life	Technology Agency of the Czech Republic (TAČR)	2021-2024
Jan Chocholáč, Ing., Ph.D.	SIGMA – DC3, Transport 2020+ and Transport 2030+, Environment for Life	Technology Agency of the Czech Republic (TAČR)	2021-2024
Bohumil Culek, prof. Ing. CSc.	TRIO	Ministry of Industry and Trade (MPO)	2021
Petr Voltr, doc. Ing., Ph.D.	INTER-EXCELLENCE, INTER-ACTION sub-programme	Ministry of Education, Youth and Sports (MEYS)	2021, 2022
Petr Voltr, doc. Ing., Ph.D.	OP PIK (Applications)	Ministry of Industry and Trade (MPO)	2023
Dušan Čermák, Ing. Ph.D.	EPSILON, ZÉTA	Technology Agency of the Czech Republic (TAČR)	2020, 2021
Ladislav Řoutil, doc. Ing. Ph.D.	Transport 2020+ and Transport 2030+, SIGMA, Trend	Technology Agency of the Czech Republic (TAČR)	2020-2024
Ladislav Řoutil, doc. Ing., Ph.D.	OP PIK, OP TAK	Ministry of Industry and Trade (MPO)	2023, 2024
Josef Bulíček, doc. Ing. Ph.D.	VEGA	Scientific Grant Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic and the Slovak Academy of Sciences	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:

During the evaluated years, the Faculty of Transport Engineering (FTE)^[1] secured a number of significant national and international research projects. These included projects funded under the European Commission's H2020 and Horizon Europe programmes, as well as national projects supported by the Ministry of Education, Youth and Sports (MŠMT) under the OP VVV programme, the Technology Agency of the Czech Republic (TAČR), and sectoral calls from the Ministry of Industry and Trade (MPO) under the OP PIK and OP TAK programme. The FTE was the main recipient of eight research projects, with a total funding of CZK 31.827.000 (EUR 1.256.000), and a co-recipient in twenty-five projects, with total funding of CZK 68.737.000 (EUR 2.711.000).

The ten most significant research projects include the following:

"Switch and Crossing Optimal Design and Evaluation (S-CODE)"^[2]

- **Funding provider/programme:** EU / HORIZON 2020 (Shift2Rail)
- **Project duration:** 1 November 2016 – 31 October 2019
- **Collaborating organisations:** *University of Birmingham (project coordinator), Ferrovial, Loughborough University, Rhomberg Rail Consult GMBH, COMSA, Brno University of Technology (VUT), DT – Výhybkárna a strojírna, a.s., Rail Safety & Standards Board*

Project description:

The project focused on technological visions for the next generation of railway switches. The research and development efforts were centred on the overall architecture of switch construction, diagnostics, control, safety equipment, track design, and technological procedures.

The project at the FTE was implemented in three phases:

1. **Initial phase** – A review of global best practices and identification of optimal approaches in the field. This phase also involved an analysis of technical, safety, and operational requirements for switch designs used in Europe, which guided the proposed solutions. Additionally, it explored applicable technologies and materials that would serve as the basis for the final design.

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.

2. **Development phase** – The creation of a technical solution, covering structural design, material selection, and simulation calculations to determine the optimal configuration and component combinations for maximising switch performance.
3. **Final phase** – The real-world testing of selected structural components and concepts, followed by an evaluation of their effectiveness in meeting initial requirements.

Detailed information on the project's progress and outcomes can be found on CORDIS^[2].

"European Bus Rapid Transit of 2030: Electrified, Automated, Connected (eBRT2030)"^[3]

- **Funding provider:** EU – Horizon Europe
- **Project duration:** 1 January 2023 – 31 December 2026 (*University of Pardubice: 1 June 2024 – 30 June 2026*)
- **Collaborating organisations:** *UITP and approximately 50 public transport organisations across the EU, including representatives from the Czech Republic: Prague Public Transit Company (Dopravní podnik Praha, a.s.), Škoda Electric a.s., Elektroline a.s., University of Pardubice*

Project description:

This project focuses on research in large-capacity public transport systems based on road vehicles, specifically high-capacity electric buses and partial trolleybuses. The aim is to gain expertise and know-how from the deployment and pilot operations of these next-generation transport concepts.

The project is structured around ten use cases, each representing a pilot project for the new vehicle concept. The project's key stakeholders include public transport companies, vehicle manufacturers and suppliers, infrastructure system providers, as well as research and academic institutions.

The research is multidisciplinary, addressing a wide range of topics, including:

- Technical and energy aspects of large-capacity vehicles
- Passenger comfort and staff working conditions
- Vehicle maintenance, reliability, and operational efficiency
- Sustainable transport solutions and environmental impacts

All these areas are explored in an interconnected manner across the use cases. Most of the cases focus on electric bus operations.

The University of Pardubice and FTE are specifically involved in the use case concerning the electrification of the bus route between Nádraží Veleslavín and Prague Airport. In March 2024, operations with high-capacity partial trolleybuses commenced on this route. In the Czech Republic, this represents a highly efficient solution with a short implementation period and significant added value.

On this route, approximately 50% of the journey is powered by overhead catenary wires, while the remaining 50% relies on battery power.

"Predictive Maintenance of Railway Superstructure"^[4]

- **Funding provider/programme:** TAČR / Transport 2020+
- **Project duration:** 1 January 2021 – 30 September 2024
- **Main recipient:** University of Pardubice
- **Collaborating organisations:** *University of West Bohemia in Pilsen, Pirell s.r.o., COLD SPRAY – rail, s.r.o.*

Project description:

This project focused on enhancing the safety and operational resilience of the most heavily loaded railway track sections. The solution was based on implementing advanced methods for functionally graded materials, specifically designed for contact fatigue.

The key outcome of the project was the development of a new technology for creating functional surfaces on rails and switch components. A process based on plasma technology for forming contact layers was designed and verified under real operational load conditions. Unlike current methods, the developed technology minimises thermal effects on rails, significantly improving their durability.

A new structural-based contact layer was proposed, allowing dynamic strengthening during operational loading while improving safety against sudden rail fractures at high-speed loads – a crucial aspect for high-speed railway construction. The results of the project were incorporated into a utility model and an approved methodology.

"Wayside Diagnostics of Railway Vehicle Running Gear (DiPo)"^[5]

- **Funding provider/programme:** TAČR / Transport 2020+
- **Project duration:** 1 January 2021 – 30 June 2024
- **Main recipient:** University of Pardubice
- **Collaborating organisations:** STARMON s.r.o. (project participant); additional collaboration (non-project participants) with Prague Public Transit Company (DPP, a.s.), Škoda Transportation, Full Servis Metro Praha, and the Railway Administration (SŽ, s.o.)

Project description:

The project developed a diagnostic system capable of detecting faults in moving railway vehicles by measuring rail vibrations. The system enables data measurement, transmission, storage, and evaluation, allowing for the identification of various types of malfunctions.

The final outcome was a hardware system developed for railway operations, along with software for measurement, data transfer, and evaluation. The functionality of the system was tested in real-world conditions at DPP Praha – Metro and a selected site within the SŽ railway network.

- At both locations, diagnostic installations were carried out, with 500.000 train passages recorded in DPP and 75.000 passages in the SŽ network.
- The system received positive feedback from DPP, SŽ, and Škoda Full Servis, and further development and practical implementation are anticipated.
- In metro operations, the system contributes to optimising vehicle maintenance on a daily basis.

"Josef Božek National Competence Centre for Land Transport Vehicles (JOBNAC)"^[6]

- **Funding provider/programme:** TAČR
- **Project duration:** 1 July 2018 – 31 December 2022
- **Collaborating organisations:** Czech Technical University in Prague (project coordinator), Brno University of Technology, Eaton Elektrotechnika s.r.o., Škoda Auto a.s., PBS Turbo s.r.o., TÜV SÜD Czech s.r.o., Škoda Transportation a.s., VSB – Technical University of Ostrava, Technical University of Liberec, Research and Testing Institute Plzeň s.r.o., VÚKV a.s., Advanced Engineering s.r.o., SVOS spol. s r.o., University of West Bohemia in Pilsen, KAR group a.s., VarioTec s.r.o., ZETOR TRACTORS a.s., TROJÍRNA OSLAVANY spol. s r.o., BRANO a.s., TRIBOTEC spol. s r.o., DAKO-CZ a.s., Garrett Motion Czech Republic s.r.o., ŠKODA ELECTRIC a.s., Siemens Mobility s.r.o., TATRA TRUCKS a.s.

Project description:

The project focused on the research and development of future sustainable mobility solutions for road and rail vehicles, integrating them into transport systems in line with the strategic technological development of key sectors for both the Czech economy and industrial objectives.

To achieve this goal, a long-term collaboration consortium was established, leveraging synergies between related disciplines that face similar critical development challenges, as well as synergies from collaboration between academic, research, and industrial institutions.

At the Faculty of Transport Engineering, the project was primarily focused on applying high-strength steels in transport vehicle structures, with the aim of reducing vehicle weight. This, in turn, leads to lower operational material consumption, ultimately reducing the environmental impact of vehicle operation.

"Turnout 4.0"^[7]

- **Funding provider/programme:** TAČR / Transport 2020+
- **Project duration:** April 2020 – March 2024
- **Collaborating organisations:** DT - Výhybkárna a strojírna, a.s. (main recipient), University of Pardubice (FTE), Brno University of Technology, RETIA, a.s.

Project description:

The aim of the project was to develop a comprehensive intelligent autonomous diagnostic system for railway turnouts with a fixed crossing nose, capable of evaluating the technical condition of the crossing and detecting sudden failures.

The Faculty of Transport Engineering primarily contributed to the following project outcomes:

1. DISC-M – A mobile device for measuring and collecting turnout data (functional prototype)
2. A system for intelligent diagnostics and predictive maintenance of turnouts (20% contribution, utility model No. 37850, Industrial Property Office)

FTE's role in the project:

The DISC-M infrastructure diagnostics system, designed to operate from a moving vehicle, enables the comparison of a large number of turnouts without the need for on-site instrumentation, which is both time- and cost-intensive. By deploying the system across multiple vehicles, near real-time monitoring of operational turnouts can be achieved.

During the project, a hardware solution for the DISC-M autonomous data collection device was developed and tested in live operation. This included sensor technology, data acquisition (DAQ), and control algorithms. Additionally, software for data post-processing, metadata management, and database export was developed and tested.

Project impact:

The autonomous DISC-M device (developed by FTE) enables data collection from moving railway vehicles. The collected data is then combined with in-track turnout measurements (DISC-S) for further processing using machine learning algorithms. These algorithms assess the dynamic response of both the turnout and the railway vehicle, evaluating current turnout conditions and predicting the development of key parameters (e.g. reaching critical limits).

The system supports infrastructure managers in transitioning towards predictive maintenance of the most dynamically stressed elements of the railway network.

"Predictive Vehicle Maintenance System"^[8]

- **Funding provider/programme:** TAČR / Transport 2020+

- **Project duration:** February 2020 – December 2022
- **Collaborating organisations:** *Ostrava Public Transport Company (project coordinator), VSB – Technical University of Ostrava, University of Pardubice (FTE)*

Project description:

This project focused on developing a predictive maintenance system for vehicles operated by urban and regional transport service providers.

The Faculty of Transport Engineering played a key role in the project by developing a pilot implementation of a predictive vehicle maintenance system, which included:

- Analysis and development of advanced tools for optimising supply chains, workforce management, and repair planning for both technical equipment and human resources.
- Design of a new data warehouse, enabling integration of the above functionalities and connection to vehicle and infrastructure sensor data.
- Implementation of machine learning for fault prediction, maintenance planning, and optimisation based on the fusion of system and sensor data.
- Recommendations for drafting tender documentation for an operational software system for dispatchers, field workers, and transport company management.
- Algorithmic maintenance scheduling using the P-graph methodology.

"Increasing the Efficiency of Railway Transport through Energy Optimisation in a Multimodal Mobility System"^[9]

- **Funding provider/programme:** TAČR / Theta 2
- **Project duration:** 1 July 2019 – 30 June 2022
- **Collaborating organisations:** *EGÚ Brno a.s., University of Pardubice (FTE)*

Project description:

The project aimed to explore ways of shifting a significant share of freight transport from road to electric rail transport, focusing on energy efficiency and reducing external costs. The research covered a broad analysis of potential strategies, assessing their feasibility and energy-saving potential. In addition, two specific technical solutions were developed to support the transition to energy-efficient rail transport: a unified railway power supply system with converter-based traction substations and battery-powered operation on non-electrified lines.

At the University of Pardubice, research concentrated on technological solutions to enhance railway efficiency and support the shift to electric traction. The work focused on railway vehicles operating with both overhead catenary and battery power and on the development of converter-based power supply technology for 25 kV 50 Hz traction networks. Both technologies are novel in the Czech railway sector. The converter-based power supply system was the first of its kind to be implemented in the Czech Republic and only the second globally, introduced on Corridor II. Hybrid-powered rail vehicles are expected to enter service in the Czech Republic by 2025.

As part of the project, the FTE conducted in-depth conceptual analyses of these technologies, evaluating their potential to maximise efficiency, assessing achievable technical parameters, and quantifying expected benefits through case studies. The research also included an assessment of the strengths and weaknesses of these new technologies, providing a foundation for their future implementation.

"Development of Technology for Intelligent Freight Transport Flow Management"^[10] (incl. Phase II)"

- **Funding provider/programme:** Ministry of Industry and Trade (MPO) / Operational Programme Enterprise and Innovation for Competitiveness
- **Project duration:** 2019–2021 (Phase I), 2022–2023 (Phase II)
- **Collaborating organisations:** MD logistika a.s. (main project coordinator), DIGITECH s.r.o., University of Pardubice (FTE)

Project description:

The project focused on the development of software for optimising the collection and distribution of goods. It was divided into two interrelated phases and involved two faculties of the University of Pardubice – the Faculty of Transport Engineering (FTE) and the Faculty of Electrical Engineering and Informatics.

The university team was responsible for designing and implementing optimisation algorithms to improve logistics planning. The aim was to develop a model that would generate efficient transport plans, minimising costs while ensuring the smooth flow of goods between dispatch and destination points. The software had to consider a range of constraints, including the possibility of transshipments at intermediate hubs (*hub-and-spoke* logistics), temperature-controlled transport (dry, chilled, frozen goods), and the optimal use of transport units of different sizes, with options for stacking and trailer swapping.

In the second phase of the project, the original optimisation algorithm was replaced with a more advanced solution that provided improved results. The system was also expanded with additional functionalities, enhancing its capabilities. The final software was implemented as a web-based application for transport route planning. In the later stage of development, it was extended to include real-time tracking of vehicle movements using GPS data and driver-reported tasks via a mobile application.

"Hybrid Locomotive and Electronic Optimisation of Its Energy Management"^[11]

- **Funding provider/programme:** Ministry of Industry and Trade (MPO) / TRIO
- **Project duration:** 1 April 2016 – 31 December 2019
- **Collaborating organisations:** CZ LOKO a.s. (main project coordinator), MSV Elektronika s.r.o., University of Pardubice (FTE)

Project description:

The aim of the project was to develop a hybrid diesel locomotive with electric power transmission, including a control system. The development focused on improving the energy management of the locomotive by storing kinetic energy generated during braking in a battery. This stored energy is subsequently reused for traction during vehicle operation and for powering auxiliary systems.

Another key approach to reducing fuel consumption was to enable the diesel engine to operate at minimum specific fuel consumption, thereby minimising overall emissions. Further energy savings were achieved by eliminating idling operation and reducing auxiliary power consumption through the use of an energy storage system.

The project resulted in functional prototypes of the hybrid locomotive and its subsystems, including the control system and energy storage unit. It provided new insights into the design of hybrid locomotive powertrains, control systems, and energy management algorithms, as well as operational characteristics and potential fuel savings across different locomotive operating modes. Another important objective was to verify the safety and reliability of the applied technology.

At the Faculty of Transport Engineering, research contributions were primarily in three areas:

1. Designing the concept of the locomotive's traction system, including specifications and dimensioning of key components. A series hybrid powertrain concept was proposed, with the traction battery directly connected to the DC link.
2. Simulating locomotive operation and estimating its energy performance and hybridisation benefits. A simulation model of the locomotive was developed at FTE, enabling extensive calculations under different operating conditions. Based on these simulations, parameters of the traction system were iteratively adjusted.

Developing control algorithms for energy flow management, with a particular focus on pulse rectifier control algorithms, which function as the charging unit for the traction battery.

HTML links to additional documentation:

- [1] <https://dfjp.upce.cz/en>
- [2] <https://cordis.europa.eu/project/id/730849>
- [3] <https://ebrt2030.eu>
- [4] <https://starfos.tacr.cz/en/projekty/CK02000177>
- [5] <https://starfos.tacr.cz/en/projekty/CK02000218>
- [6] <https://starfos.tacr.cz/en/projekty/TN01000026>
- [7] <https://starfos.tacr.cz/en/projekty/CK01000091>
- [8] <https://starfos.tacr.cz/en/projekty/CK01000060>
- [9] <https://starfos.tacr.cz/en/projekty/TK02010009>
- [10] https://starfos.tacr.cz/en/projekty/EG17_107%2F0012371
- [11] <https://starfos.tacr.cz/en/projekty/FV10724>

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
TAČR	Elimination of Operational Failures of Railway Vehicle Axles	1235/49				
MVČR	Simulation of Aircraft Accident Interventions	4790/189				
TAČR	Setting New Educational and Training Priorities Reflecting the Changing Labour Market Needs in the Transport and Communications Sector	752/30	911/36	153/6		
TAČR	Non-Destructive Determination of Mechanical Stress in Continuous Welded Rail		1252/49	1668/66	627/25	
TAČR	Predictive Maintenance of Railway Superstructure			4013/158	5748/227	5491/217
TAČR	Wayside Diagnostics of Railway Vehicle Running Gear (DiPo)			1331/53	1200/47	1027/41
EU (Horizon)	Using Public Transport Systems for Sustainable Urban Freight Delivery					1085/43
TAČR	Innovative Communication and Awareness Platform Using Modern Educational Tools to Educate Generation Z on the Environmental Footprint of Consumption in the Context of Strengthening the Resilience of a Knowledge- and Innovation-Based Economy					544/21
Total		6777/267	2163/85	7165/283	7575/299	8147/322
In the role of another participant						
Provider ²⁷	Project name	Support (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
TAČR	Competence Centre for Railway Vehicles	6642/262				
MPO	Hybrid Locomotive and Electronic Optimisation of Its Energy Management	805/32				
EU (Horizon)	Switch and Crossing Optimal Design and Evaluation (S-CODE)	1620/64				
MVČR	Development of an Innovative Method for Detecting Traffic Offences Using Electronic Accident Data	595/23	125/5			
MPO	3D Printing of Computationally Optimised Metal Components Using DMLS Technology	734/29	734/29			
MPO	Development of Technology for Intelligent Freight Flow Management	5672/224	5171/204	510/20		
TAČR	The Socio-Cultural Dimension of Sustainable Urban and Regional Mobility Plans	756/30	837/33			
TAČR	Impacts of Low-Emission Mobility on Reducing the Environmental Effects of Urban Agglomerations	737/29	716/28	731/29		

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.

TAČR	Josef Božek National Competence Centre (JOBNAC)	1395/55	2729/108	1443/57	619/24	
TAČR	Increasing the Efficiency of Railway Transport Within the Energy Optimisation of a Multimodal Mobility System	533/21	1043/41	1055/42	524/21	
TAČR	Predictive Vehicle Maintenance System		1188/47	1125/44	938/37	
TAČR	Turnout 4.0		1464/58	1686/67	1450/57	1536/61
TAČR	Smart City Logistics in the Context of E-Commerce and Sustainable Urban Mobility Plans		712/28	1718/68	1424/56	1251/49
TAČR	Intelligent Auto-Diagnostics			929/37		
TAČR	Performance Standards for Expert Assessments of the Course and Causes of Traffic Accidents			91/4	621/24	363/14
MPO	Smart Parking & Charging			428/17	1203/47	729/29
MPO	Research and Development of an Innovative Radome Type Based on Non-Conventional Materials for a Radar Antenna System – ELDOM			122/5	678/27	455/18
MPO	Development of a Software Structure Using Principles of Quantum Physics for Real-Time Logistics Process Optimisation				898/35	579/23
MPO	Development of Technology for Intelligent Freight Flow Management – Part II: Optimisation and Expansion				2083/82	1888/74
TAČR	Semi-Active Damping System for a Single-Decker Electric Unit					202/8
TAČR	Computational and Experimental Support for 3D Printing of Highly Stressed Plastic Components with Enhanced Thermal and Fatigue Resistance					900/35
TAČR	Josef Božek National Competence Centre for Ground Vehicle Engineering					3149/124
TAČR	Fast Change of Mobility GHG Emissions					2268/89
MPO	Tools for Implementing Railway Power Supply in 25 kV / 50 Hz Traction Grid Networks					884/35
EU (Horizon)	Building a Community of Railway Scientific Researchers and Academia for ERJU and Enabling a Network of PhDs (Academia Teaming with Industry) – ACADEMICS4RAIL					49/2
Total		19489/769	14719/581	9838/390	10438/410	14253/561

Table 3.3.2 - Contract research activities

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
České dráhy, a.s.	Performance of the Independent Capacity Allocator Function for the National Railway Owned by České dráhy, a.s.	4 227/167	783/31	715/28	893/35	957/38
CZ LOKO, a.s.	Simulation of Running Gear Performance		90/4			
Správa železnic, s. o.	Revision of Model Sheet Ž2, Review of Related Standards and Regulations, and Ensuring Compliance with Applicable Legislation			430/17		
AS OPERAIL (Estonia)	Simulation of the Dynamic Behaviour of the C30-M Locomotive on a 1524 mm Gauge Track			132/5		
ZIMATECHNIK s.r.o.	Study of the Concept and Main Parameters of the Electrical Equipment for a Dual-Source Electric Railcar				140/6	
Prague Public Transit Company, a.s.	Assessment of Workload Among Metro Train Drivers					300/12
SUDOP GROUP a.s.	Organisation of a Student Workshop Focused on the Transport Needs of the Pardubice Region and Work on the Project "Vision for the Pardubice Region 2050+"					300/12
DEFCON s.r.o.	Preparation for Aircraft Mechanic Work at FTE					100/4
District Court in Bruntál	Expert Report 65 T 228/2016	15/1				
MBM Industry & Rail Tech GmbH (Austria)	Material Analysis	23/1				
District Court Prague 2	Expert Report 20C 45/2017	3/0				
District Court in Ostrava	Expert Report 5T 85/2016	11/0				
District Court in Kolín	Expert Report 2T 48/2017	3/0				
District Court in Olomouc	Expert Report Ref. No. 16C 330/2017	38/1				
District Court in Kladno	Expert Report 6T 60/2017	53/2				
District Court Prague 2	Expert Report Ref. No. 4T 201/2015	55/2				
Police of the Czech Republic – Benešov District	Expert Report	27/1				
District Court in Příbram	Expert Report	46/2				
Frydlant nad Ostravicí (municipality)	Expert Report	24/1				
ČSOB Insurance	Expert Report	30/1				

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

Police of the Czech Republic – Nymburk District	Expert Report	32/1				
CEMEX Czech Republic, s.r.o.	Manufacture of 2 Funnels and a Metal Box	14/1				
CEMEX Czech Republic, s.r.o.	Manufacture of J-Ring and Metal Box	13/1				
Regional Police Directorate of the Central Bohemian Region – Zbraslav	Expert Report – Benešov Police	37/1				
District Court in Ostrava	Expert Report – Ostrava	7/0				
Kiekert	Analysis of Lock Springs	2/0				
Global - Geo, s.r.o.	PROCTOR STANDARD Test	9/0				
MBM Industry & Rail Tech GmbH (Austria)	Friction Modifier Testing	9/0				
GeoEko	Laboratory Analysis of Soil Samples	5/0				
MBM Industry & Rail Tech GmbH (Austria)	Analysis of Lubricant Consumption	26/1				
District Court Prague 2	Expert Report	41/2				
District Court Prague-East	Expert Report – Prague East	43/2				
District Court in Litoměřice	Expert Report – Litoměřice	30/1				
Global - Geo, s.r.o.	Proctor Standard and CBR Soil Testing	7/0				
STUEKEN s.r.o.	Measurement of Sample Strength and Hardness	3/0				
GeoEko	CBR, Proctor, and Compressive Strength Testing	13/1				
Police of the Czech Republic – Beroun District	Expert Report	35/1				
Police of the Czech Republic – Kolín District	Expert Report	29/1				
Trelleborg Bohemia, a.s.	Metallographic Testing	2/0				
Kiekert	Analysis of Spring Cracking	2/0				
GeoEko	PROCTOR STANDARD and CBR Testing	5/0				
MBM Industry & Rail Tech GmbH (Austria)	Lubricant Testing	35/1				
GeoEko	Soil Testing – Rokytnice	9/0				
DUVOX	Static Load Test of Balcony Railing Supports	3/0				
District Court in Olomouc	Expert Report 12 2019	1/0				
Delta Třebíč	Assessment of a Roundabout	15/1				
Global - Geo, s.r.o.	Road Connection of D35 and I/35 Býšť	10/0				
Traffic Inspectorate Břeclav	Expert Report	32/1				
District Court in Pardubice	Expert Report	30/1				

District Court Prague 1	Expert Report	9/0				
District Court Prague-East	Expert Report	34/1	3/0			
QCONTROL SRO	Termination of Core Drilling	3/0				
District Court Prague 2	Court Proceedings	2/0				
Dipostel (France)	Lubricant Sample Testing	43/2				
GeoEko	Soil Testing	16/1				
Police of the Czech Republic – Jihlava District	Expert Report	43/2				
District Court in Ústí nad Labem	Expert Report	40/2				
District Court in Olomouc	Expert Report 16 C 330/2017	3/0				
MBM Industry & Rail Tech GmbH (Austria)	Testing	27/1				
GeoEko	Soil Testing	5/0				
District Court Prague 2	Expert Report	2/0				
Road and Motorway Directorate of the Czech Republic (ŘSD)	Expert Report – Road Surface D47	29/1				
GeoEko	Laboratory Soil Testing – Pardubice-Černožice	13/1				
District Court in Litoměřice	Court Proceedings in Litoměřice	3/0				
GeoEko	Laboratory Soil Testing	2/0				
Transport Research Centre	Analysis of Vehicles with Combined Power Supply	32/1				
GeoEko	Laboratory Soil Testing	2/0				
SWIETELSKY STAV SRO	Road Diagnostics – II/308	25/1				
Pilsen City Transport Company	Optimisation of Tram Wheel Profiles for PMDP – Phase I	20/1				
Air Bohemia a.s., Ultranomad s.r.o., HELI CZECH s.r.o., AEROSERVIS, s.r.o.	Professional Certification Courses	178/7				
Secondary Technical School of Electrical Engineering, Business Academy and Secondary Technical School of Transport, Břeclav; Higher Vocational School and Secondary Technical School of Transport, Prague 1	Course: Latest Developments in Transport	8/0				
České dráhy	Accreditation of a Non-Destructive Testing Laboratory	15/1				
As per payments	Seminar: Technical and Legal Aspects of Traffic Accidents	251/10				
Private Individuals	Summer Day Camp	26/1				
DEFCON	Lifelong Learning Course	8 135/321				

Railway Workers' Trade Union	Course for OSŽ Officials	200/8				
Admitted First-Year Students	Preparatory Course for Admitted Students – Mathematics, Physics	147/6				
As per payments	Course: Technical and Legal Aspects of Traffic Accidents	46/2				
Škoda Auto	Communication in Green Logistics	50/2				
Svítkov Housing Estate	Proposal for Changes in Traffic Organisation in a Housing Estate	12/0				
SŽDC (Railway Infrastructure Manager, state organisation)	Expert Report – Study on the Looping of the Railway Connection to Václav Havel Airport	195/8				
Czech Telecommunication Office	Audit of Travel Time Measurements	701/28	782/31	782/31	701/28	782/31
Road and Motorway Directorate of the Czech Republic	Assessment of Bridge Conditions – D47091/1 Project	208/8				
CZ LOKO	Development of Software for MUV 75	219/9				
SŽDC (Railway Infrastructure Manager, state organisation)	Analysis of Dynamic Effects of Vehicle Operation in Relation to Track Maintenance	990/39				
České dráhy	Railway Infrastructure Statement for Timetable Preparation 2019/2020	598/24				
Association of the Chemical Industry of the Czech Republic	Analysis and Research for the Development of Educational Materials on Multimodal Transport	45/2				
DT - Výhybkárna a strojírna	Study on Wheel-Rail Interaction During Tram Passage Over Switches – DPmB	80/3				
DT Výhybkárna a strojírna	Research on the Development of Dynamic Effects on Switches at Ústí nad Orlicí Railway Station – Phase 5, Part 1	575/23				
Škoda Auto	Calculation of Logistics Emissions	240/9				
PRODIN Pardubice	Development of a Basic Transport Forecast for the Municipality of Orel	63/2				
Škoda Auto	Dynamic Testing at Various Temperatures	124/5				
České dráhy	Railway Infrastructure Statement 2020	300/12				

Strojírny Oslavany	Analysis of the Possibility of Defining Load Cycles for Dampers in Service Life Testing	50/2				
Škoda Auto	CO ₂ Logistics Emissions Calculator	240/9				
Global - Geo	Soil Testing – Rousínov		13/1			
District Court in Hradec Králové	Expert Report – Hradec Králové Court		39/2			
District Court in Ostrava	Expert Report – District Court Ostrava		24/1			
City of Pardubice	Assessment of the Removal of a Traffic Lane at náměstí Republiky and Karla IV Street		5/0			
District Court in Hradec Králové	Expert Report – District Court Hradec Králové		43/2			
Trhové Sviny	Expert Report – Municipal Office Trhové Sviny		32/1			
GeoEko, s.r.o.	Compressive Strength Test		2/0			
Road Management and Maintenance of the Pardubice Region	Simplified Traffic Survey on Road II/333		10/0			
District Court in Most	Expert Report – District Court in Most		56/2			
GeoEko, s.r.o.	Determination of Rock Strength in Simple Compression		4/0			
District Court in Česká Lípa	Expert Report – District Court in Česká Lípa		20/1			
Regional Court in Brno	Expert Report – Municipal Court in Brno		54/2			
Railway Research Institute, a.s.	Measurement and Evaluation of Wheelset and Track Condition for DMU Class 861		40/2			
Railway Research Institute, a.s.	Measurement and Evaluation of Track Condition on the Dřísy – Stará Boleslav Line		36/1			
Railway Research Institute, a.s.	Measurement and Evaluation of Track Condition at the Velim Test Centre		29/1			
Railway Research Institute, a.s.	Measurement and Evaluation of Wheelset Condition for Sggrss Freight Wagon		38/1			
UNIQUA Insurance, a.s.	Expert Report – Uniqua Insurance Company		41/2			
KYB Manufacturing Czech s.r.o.	Metallographic Analysis		11/0			
Railway Research Institute, a.s.	Proposal for a Wheel Profile with a High Equivalent Conicity Value		39/2			

Josef Škrkoň - Techplast, a.s.	Hardness Test (Vickers Hardness 490±40HV1)		3/0			
Road Management and Maintenance of the Pardubice Region	Verification of Degradation Rate and Differential Model of Time Snapshots of Selected Roads		50/2			
District Court in Beroun	Expert Report 2T3/2020		52/2			
Global - Geo, s.r.o. (Order No.: 02/06/2020)	Compressive Strength Tests (Probe JV5 and JV8)		2/0			
CEMEX Czech Republic, s.r.o. (Order No.: ZL/002/2020)	Manufacture of a Base Plate for Testing Fresh Self-Compacting Concrete		8/0			
KYB Manufacturing Czech s.r.o. (Order No.: SEA20285)	Analysis of Samples CZ DF-72-20-P		32/1			
Direct Insurance, a.s.	Expert Report (Ref. No. 2019/0025866)		39/2			
District Court in Plzeň - City	Expert Report (Ref. No. 4T25/2019)		49/2			
District Court in České Budějovice	Expert Report (Ref. No. 38T42/2020)		51/2			
Railway Research Institute, a.s. (Order No.: 100200252)	Evaluation of Track Condition in the R150 Test Curve at the Velim Test Centre		15/1			
Expert Report (District Court in Kladno)	Expert Report (District Court in Kladno)		49/2			
Global - Geo, s.r.o. (Order No.: 15/09/2020)	Moravské Budějovice Bypass – Set of Laboratory Tests		24/1			
Ljunghall s.r.o. (Order No.: 4500158991)	Fracture Analysis of an Aluminium Casting		6/0			
DSP a.s. (Order No.: 2020_09_01-0001)	Traffic Survey – Study on Transport Services in the Town of Rtyně v Podkrkonoší		20/1			
ANTE, s.r.o.	Development of a Traffic Model for the City Centre of Kralupy nad Vltavou		25/1			
NDCon LOGIC a.s. (Order No.: 201103_01/UPCE)	Assessment of the Traction Properties of a Special Vehicle for Track Diagnostics		23/1			
Brno University of Technology, Faculty of Mechanical Engineering (Order No.: 0350027983)	Test Sample According to Drawing No. 3-UK-01-01		50/2			
Railway Research Institute (Order No.: 100200339)	Calculation of Equivalent Conicity of the Sggrss Wagon Wheelset with Measured Track at Velim Test Centre		6/0			
District Court in Litoměřice (Ref. No.: 24 T 122/2019-19)	Expert Report No. 14Z/2019, District Court in Litoměřice		3/0			

CEMEX Czech Republic, s.r.o. (Order No.: 4505338372)	Analysis of Defects in Polished Concrete Flooring		3/0			
District Court Prague-East (Ref. No.: 5 C 56/2016)	District Court Prague-East – Court Hearing Participation on 15 December 2020, Ref. No. 5 C 56/2016		8/0			
Regional Court in Liberec	Expert Report, Regional Court in Ústí nad Labem – Liberec Branch		31/1			
Municipal Office in Příbram	Expert Report, Municipal Office Příbram		28/1			
District Court in Kladno	Expert Report, District Court in Kladno		45/2			
GeoEko	Laboratory Soil Test		8/0			
Police of Jihlava	Expert Report, Czech Police – Regional Department Jihlava		37/1			
Railway Inspectorate	Training of Railway Inspection Employees		46/2			
Secondary School of Transport and Logistics, Liberec / College and Secondary School of Transport, Prague 1	Course – Latest Developments in Transport and Logistics		5/0			
As per payments	Testing of Aviation Personnel		60/2			
České dráhy	Basic Qualification Course, Level 3, BASIC Method		15/1			
Jawa Týnec	Preparation of Communication Requirements Between ECU and Diagnostic Tester According to OBD		41/2			
Brno Public Transport Company	Assessment of the Current State of the Wheelset-Track Interaction in Turnouts and Crossings on Ostravská Street		95/4			
České dráhy, a.s. (SOD 0817/20)	Preparation of the Network Statement for the 2021/2022 Timetable and Revision of the 2020/2021 Network Statement		310/12			
Victor Buyck Steel Construction NV (Belgium)	Fatigue Test of Materials		665/26			
Nové Město nad Metují	Technical Study – Transport and Construction-Technical Parameters of the Zoning Plan		60/2			
ČD, a.s.	Qualification Course OÖZ-D/Basic 2021			15/1		
IP Projekt, a.s. (SoD No. P210204, UPa SoD No. 1145/21)	Study on Optimisation of Operations at the Hněvice Connection Station, Hněvice Fuel Depot, ČEPRO, a.s.			86/3		

District Court in Trutnov	Expert Report, District Court in Trutnov			49/2		
JAWA Moto s.r.o. (Order No. GR 8/10/20)	Verification of the Engine Control System Function on a Motorcycle			46/2		
District Court in Jičín	Expert Report, District Court in Jičín			45/2		
KYB Manufacturing Czech s.r.o. (Order No. SEA21042)	Material Analysis			9/0		
District Court in Plzeň-City (Ref. No. 4 T 25/2019)	District Court Plzeň-City – Statement on Expert Report 14Z/2020 (Ref. No. 4 T 25/2019)			5/0		
Pražská strojírna a.s. (Order No. 117 210080)	Evaluation of Wear and Hardening in Defined Stages of Contact Load			190/8		
District Court in Ostrava	Expert Report 70 T 120/2019, District Court in Ostrava			57/2		
District Court in Kladno	Expert Report 6 T 17/2020, District Court in Kladno			8/0		
Ing. Tomáš Rak (TR DESIGN)	Laboratory Determination of Compressive Strength on a Concrete Core Sample (Košťálov)			2/0		
District Court in Trutnov (Ref. No. 3 T 53/2020)	Expert Report, District Court in Trutnov (Ref. No. 3 T 53/2020)			4/0		
DEKRA CZ a.s. (Order No. DE-CZ-FR-2021026, Request ZO-025442; Centre 1029)	Production of Tensile Test Samples			3/0		
DEKRA CZ a.s. (Order No. DE-CZ-FR-2021029, Request ZO-025502; Centre 1029)	Manufacturing of Samples for Tensile Testing			16/1		
District Court in Třebíč (Ref. No. 2 T 53/2020)	District Court in Třebíč – Summoning of Expert Witness (Ref. No. 2 T 53/2020)			5/0		
HERKUL a.s. (Order No. 20210105)	Analysis of Damage to Contact Surfaces of Gear Teeth			24/1		
LJUNGHALL s.r.o. (Order No. 4500182587)	Analysis of Aluminium Ingots			6/0		
Ljunghall s.r.o. (Order No. 4500183903)	Metallographic Sectioning of Samples			3/0		
District Court in Příbram (Ref. No. 2 T 22/2020-481)	Expert Report (Ref. No. 2 T 22/2020-481), District Court in Příbram			54/2		
Regional Court in Brno (Ref. No. 45 C 59/2017)	Expert Report (Ref. No. 45 C 59/2017), Brno City Court			7/0		
District Court in Beroun (Ref. No. 2 T 3/2020)	Summoning of Expert Witness, District Court in Beroun (Ref. No. 2 T 3/2020)			6/0		

District Court in Jičín (Ref. No. 1 T 2/2020 - Expert Report 2Z/2021)	Summoning of Expert Witness, District Court in Jičín (Ref. No. 1 T 2/2020 – Expert Report 2Z/2021)			4/0		
District Court in Hradec Králové (Ref. No. 3 T 109/2020-224)	Review of Expert Report 68-2/20 (Ref. No. 3 T 109/2020-224), District Court in Hradec Králové			50/2		
District Court in Ostrava (Ref. No. 16 C 30/2019)	Expert Report (Ref. No. 16 C 30/2019), District Court in Ostrava			7/0		
JAWA Moto spol. s r.o. (Order No. GŘ 11/4/21)	Engine Control Unit Tuning for Jawa Motorcycle			50/2		
Railway Research Institute (Order No. 100210155)	Measurement of the Wheelset of Sggrss Wagon and Track at ZC Velim and Calculation of Contact Geometry Characteristics of the Wheel-Rail System			36/1		
Railway Research Institute (Order No. 100210156)	Proposal for a Wheel Profile Exhibiting Higher Equivalent Conicity Values with the Measured Track at ZC Velim			22/1		
Czech Police (JID: PCR07ETRfo81848577)	Expert Report (JID: PCR07ETRfo81848577), Czech Police			51/2		
Kiekert-CS, s.r.o. (Order No. 517/26378050)	Analysis of Springs – Fractographic Examination of Fracture Surface			3/0		
ŠKODA AUTO a.s. (Order No. 26672248/611/07.05.2021)	Expert Report, ŠKODA AUTO			55/2		
District Court in Příbram (Case No. 2 T 19/2020)	Expert Report (Case No. 2 T 19/2020), District Court in Příbram			54/2		
Ing. Jiří Šura	Laboratory Analyses of Two Samples of Cohesive Soils (Jevíčko–Fortification Wall Project)			2/0		
Trelleborg Bohemia, a.s. (Order No. 4500085614)	Analysis of Steel Valve			4/0		
KIEKERT-CS, s.r.o. (Order No. 515/26381174/29.06.2021)	Analysis of DRF Ford GL			4/0		
DEKRA CZ a.s. (Order No. DE-CZ-PL-2021081)	Training – Comparison of Metallography Using Optical and Electron Microscopy			4/0		
District Court in Pardubice (Ref. No. 20 C 183/2020-167)	Expert Report (Ref. No. 20 C 183/2020-167), District Court in Pardubice			38/2		
Vossloh Drážní Technika s.r.o. (Order No. 2021393)	Measurement of Longitudinal Rail Resistance in Vossloh Elastic Fastening Systems (W 14 and W 30 HH)			41/2		

District Court for Prague 8 (Ref. No. 29C222/2019)	Expert Report (Ref. No. 29 C 222/2019), District Court for Prague 8			29/1		
ŠKODA AUTO a.s. (Order No. 26672248/611/07.05.2021)	Expert Report			60/2		
Vodní zdroje Chrudim, spol. s r.o. (Order No. 73/21)	Laboratory Analysis of Soil Sample			3/0		
Trelleborg Bohemia, a.s. (Order No. 4500087768)	EDX Analysis			4/0		
Yusen Logistics (Czech) s.r.o. (Order No. NAPO_2102569)	Assessment of Condition and Damage of STR Loading Docks			7/0		
ŠKODA AUTO a.s. (Order No. 26696996/611)	Failure Analysis (Leakage) of Casting Moulds – Metallographic Examination at the Damage Site			5/0		
Road and Motorway Directorate of the Czech Republic (Order No. 01KV-002174)	Inspection of Defects in Bridge Structures on the D47 Motorway			19/1		
National Cultural Monument Vyšehrad (Order No. OBJ/282/2021)	Trial Ground-Penetrating Radar Survey at the Vyšehrad National Cultural Monument Site			10/0		
Trelleborg Bohemia, a.s. (Order No. 4500088769)	Valve Analysis			3/0		
JAWA Moto spol. s r.o. (Order No. GR 6/10/21)	Proposal for Onboard Electronics Solution for a Motorcycle			2/0	50/2	
DEKRA CZ a.s. (Order No. DE-CZ-FR-2021220)	Assessment of Corrosion Damage of a Component			7/0		
Higher Vocational School and Secondary Technical School Česká Třebová; Higher Vocational School, Secondary Technical School and Business Academy Čáslav; Integrated Secondary School of Automotive Engineering Brno; Higher Vocational School and Secondary Technical School of Transport Děčín; Secondary Technical School Frýdek-Místek; Secondary Technical School and Vocational School Kladno; Secondary Technical School Nové Město; Secondary School of Chemistry and Food Technology Olomouc; Secondary School of Trans-	Course: Latest Developments in Transport, Management, and Logistics			13/0		

port and Logistics Ostrava; Secondary Technical School of Transport, Higher Vocational School and Secondary Technical School of Transport Prague 1						
As per payments	Aviation Personnel Testing II			29/1		
Ghent University (Belgium), VALENTA ZT S.R.O.	Static Laboratory Testing of Steel Samples			92/4		
Pražská strojírna a.s.	Optimisation of the Wheelset- Rail Interaction in Tramway Operations			760/30		
S RAIL LEASE s.r.o.	Optimisation of Maintenance Interventions on the Wheel Profiles of Vectron Locomotives			250/10		
České dráhy, a.s. (Contract No. SoD 0653/21)	Railway Infrastructure Statement 2023			306/12		
ŠKODA AUTO a.s. (Contract No. SoD UPa 0861/21)	Contract Research in CO ₂ Logistics Emission Calculations – KALOGEMIS 4.0			250/10		
ŠKODA AUTO a.s. (Contract No. SoD UPa 0862/21)	Contract Research in CO ₂ Logistics Emission Calculations – KALOGEMIS 5.0			55/2		
As per payments	Course: Latest Developments in Transport, Logistics, and Management				19/1	
As per invoices	Aviation Personnel Testing III				199/8	
Chart Ferox, a.s. (Order No. 3853536 OP)	Training in Strength Calculations				34/1	
Ministry of Defence of the Czech Republic, LOM PRAHA s.p.	Course for CLV Examiners and Instructors				87/3	
ŠKODA AUTO a.s. (Contract No. 0984/20)	KALOGEMIS System – Administration, Maintenance, Updates				5/0	
City of Trutnov	Traffic Counting on Local Roads in Trutnov				98/4	
ŠKODA AUTO a.s. (Order No. 26676407/611, No. 26736059/611/25.05.2022)	Dynamic Strength Testing of Adhesives				100/4	
District Court for Prague 8 (Ref. No. 7 C 25/2020)	Expert Report – District Court for Prague 8 (Ref. No. 7 C 25/2020)				33/1	
Police of the Czech Republic (Ref. No. KRPA- 340729-72/TČ-2019- 000005-44)	Expert Report – Czech Police (Ref. No. KRPA-340729-72/TČ- 2019-000005-44)				49/2	

District Court in Hradec Králové (Ref. No. 3T109/2020)	Summoning of Expert Witness (Expert Report 6Z/2021) (Ref. No. 3T109/2020) – District Court in Hradec Králové				22/1	
District Court in Bruntál (Ref. No. 2 T 54/2021-360)	Review Expert Report – District Court in Bruntál (Ref. No. 2 T 54/2021-360)				49/2	
ZIMATECHNIK s.r.o. (Order No. OBJ 008/2021)	Preliminary Calculation of Traction Characteristics and Definition of Vehicle Energy Demand				56/2	
ŠKODA AUTO a.s. (Order No. 26710817/611/07.01.2022)	Failure Analysis (Leakage) of Casting Moulds				5/0	
Správa železnic (Order No. 22/640100003)	Verification of Strength Characteristics of Embedded Rails in a Deficient Bridge				8/0	
GeoEko, s.r.o. (Order)	Laboratory Testing of Soils/Rocks from the Sezemice Area				4/0	
Regional Court in Brno (Ref. No. 45 C 59/2020)	Court Hearing at the Brno Municipal Court (Ref. No. 45 C 59/2020)				6/0	
National Cultural Monument Vyšehrad (Order No. OBJ/13/2022)	Ground-Penetrating Radar Survey of Underground Fortification Spaces				73/3	
Datwyler Sealing Technologies CZ s.r.o. (Order No. 4500032175)	Product Testing – Pressure Test of Shape 8918				3/0	
District Court in Ostrava (Ref. No. 70T120/20109)	Supplementary Expert Report 3Z/2021 – District Court in Ostrava (Ref. No. 70T120/20109)				17/1	
District Court for Prague 8 (Ref. No. 11C169/2018-161)	Expert Report – District Court for Prague 8 (Ref. No. 11C169/2018-161)				31/1	
KIEKERT-CS, s.r.o. (Order No. 514/26391908)	Analysis of a Spring from PV Tests				3/0	
Projekce CZ s.r.o. (Order)	Laboratory Testing of Compressive Strength on Core-Drilled Floor Samples				7/0	
District Court in Přerov (Ref. No. 3 T 8/2020-252)	Review of Expert Reports – District Court in Přerov (Ref. No. 3 T 8/2020-252)				39/2	
ZIMATECHNIK s.r.o. (Order No. OBJ 002/2022)	Traction Calculations for a Battery-Powered Vehicle to Assess Compliance with Operational Deployment Conditions				42/2	
District Court in Tachov (Ref. No. 8T 127/2021)	Expert Report – District Court in Tachov (Ref. No. 8T 127/2021)				60/2	

CZ LOKO, a.s. (Order No. N22-09024-2)	Modification of Control Computer Software for Communication with a Tachograph on MUV 75				18/1	
District Court for Prague 8 (Ref. No. 29 C 222/2019)	Expert Report – District Court for Prague 8 (Ref. No. 29 C 222/2019)				4/0	
Police of Louny (Ref. No. KRPU-23820-135/TČ-2020-040771-63ZT)	Expert Report – Czech Police (Ref. No. KRPU-23820-135/TČ-2020-040771-63ZT)				50/2	
Vodní zdroje Chrudim s.r.o. (Order No. 38/22)	Laboratory Analysis of Three Rock Samples – Compressive Strength Test				6/0	
Trelleborg Bohemia, a.s. (Order No. 4500092270)	Analysis of Rejected Parts				8/0	
Mgr. Vojtěch Dobiáš (Order No. 1/2022)	Analysis of Solid Matrix (Rock) to Determine Compressive Strength				5/0	
Czech Republic – Railway Inspection (Order No. 176/2021)	Vehicle-Track Interaction Analysis				17/1	
VÚB, a.s. (Order No. 700220552)	Testing of Welded Steel Straps for Tensile Strength				3/0	
Global - Geo, s.r.o. (Order No. 01/05/2022)	Material Analyses for Project II/327 Smidary				10/0	
JTEKT s.r.o. (Order No. 1624058)	Fracture Analysis of an Aluminium Casting				4/0	
Municipality of Rybitví (Order No. 325/2022)	Traffic Engineering Assessment of the Road Condition Rybitví-Stará Obec				40/2	
District Court in Rokycany (Ref. No. 3T 32/2019)	Expert Report – District Court in Rokycany (Ref. No. 3T 32/2019)				51/2	
JTEKT Czech Republic s.r.o. (Order No. 1625179/6.6.22)	Analysis of a Small Metal Particle				1/0	
District Court in Příbram (Ref. No. 2T 77/2020)	Review Expert Report – District Court in Příbram (Ref. No. 2T 77/2020)				7/0	
District Court for Prague 4 (Ref. No. 40 C 234/2020-136) – case received on 26.9.2022 under PID 0486555	Expert Report – District Court for Prague 4 (Ref. No. 40 C 234/2020-136)				43/2	
City of Trutnov (Order No. 111/R-OBJ/22)	Traffic Engineering Assessment of Road Conditions in Horská Street – Trutnov				238/9	
GeoEko, s.r.o. (Order by email)	Laboratory Testing of Soil/Rock Samples from the Veská Area				5/0	

District Court for Prague 8 (Ref. No. 11 C 169/2018) – case received on 14 October 2022 under PID 0488320	Summoning of Expert Witness – District Court for Prague 8 (Ref. No. 11 C 169/2018)				4/0	
Technical Services of Hradec Králové (Order No. 222522)	Ground-Penetrating Radar Survey of Road Pavement				32/1	
JTEKT Europe SAS (Order No. 1633537)	Analysis of Inclusion in an Aluminium Casting				2/0	
District Court for Prague 8 (Ref. No. 7 C 25/2020 - 198)	Summoning of Expert Witness – District Court for Prague 8 (Ref. No. 7 C 25/2020-198)				3/0	
VISION CONSULTING AUTOMOTIVE, s.r.o. (Order No. Pav_220912_01)	Material Testing as per Offer No. VVCD-73-22-P				75/3	
District Court in Přerov (Ref. No. 3 T 8/2020-252)	Expert Report – District Court in Přerov (Ref. No. 3 T 8/2020-252)				5/0	
Mgr. Vojtěch Dobiáš (Order No. 2/2022)	Analysis of Solid Matrix (Rock) – Compressive Strength Test				8/0	
Škoda Transportation	Development of Wheel Profiles for Metro and Feasibility Assessment of Thinned Flange Profiles				300/12	
Brno Public Transport Company, a.s. (Contract No. 0837/22)	Assessment of the Interaction Between Wheelsets and Tracks in Curved Tramway Sections				88/3	
České dráhy, a.s. (SoD 0369/22)	Network Statement 2024				310/12	
According to payments	Course: Latest Developments in Transport, Logistics, and Management					18/1
PRAGA AVIA S.R.O., Lukáš Neděla, AIR TEAM Service, s.r.o., CerberFly s.r.o.	Aviation Personnel Testing					20/1
České dráhy, a.s. (Contract No. 1390/19)	Course OOZ-D					18/1
Mesa Parts, s.r.o. (Order via email)	Basics of Machined Materials – Classification – Cutting Materials					16/1
Defcon s.r.o., Prague (Contract No. 0264/23)	BF – Preparation of Aircraft Mechanics					4 500/178
Deloitte Advisory s.r.o. (Consulting Services Order)	Professional Consultations on Railway Vehicles in Relation to Contract VZ 487015 "Modernisation of 22 Passenger Railway Carriages" (TED 2014/S 087-153091)					100/4

ČD, a.s. (UPCE Contract No. 1607/23) - related to SC524001	Provision of Support and Maintenance for the Information System for Railway Capacity Allocation (IS PROK)					6/0
District Court for Prague 8 (Ref. No. 11 C 65/2016-400)	Expert Report – District Court for Prague 8 (Ref. No. 11 C 65/2016-400)					55/2
District Court for Prague 8 (Ref. No. 16 C 28/2020-144) – case received on 7 October 2022 under PID UPA363899	Expert Report – District Court for Prague 8 (Ref. No. 16 C 28/2020-144)					33/1
District Court for Prague 2 (Ref. No. 46 C 8/2020-161) – case received on 10 July 2023 under PID 0505066	Expert Report – District Court for Prague 2 (Ref. No. 46 C 8/2020-161)					35/1
TATRAVAGÓNKA a.s. (Order No. 2 22 TE 067)	Assessment of Vehicle Manoeuvrability					30/1
Police of the Czech Republic – South Bohemian Regional Headquarters, Prachatice (Case received on 15 December 2022 under PID 0493104)	Expert Report 01Z/2023 – KRPC-104140-148/TČ-2021-020671					51/2
Regional Police Directorate of the Ústí nad Labem Region, Most District Department (KRPU-127635-201/TČ-2012-040871-RO)	Expert Report – Regional Police Directorate of the Ústí Region, Most Branch (Ref. No. KRPU-127635-201/TČ-2012-040871-RO)					44/2
DATWYLER Sealing Technologies CZ, s.r.o. (Order No. 4500056230)	Analysis of Components					15/1
District Court for Prague 8 (Ref. No. 7 C 272/2019-263) – case received on 8 March 2023 under PID 0497691	Review Expert Report (Ref. No. 7 C 272/2019-263)					48/2
Police of the Czech Republic, Most District Department (Ref. No. KRPU-155051-116/TČ-2021-040871-RO)	Expert Report – Police of the Czech Republic, Most (Ref. No. KRPU-155051-116/TČ-2021-040871-RO)					74/3
District Court in Cheb (Ref. No. 2 T 67/2022) – case with measures received on 14.2.2023 under PID 0496467	Expert Report – District Court in Cheb (Ref. No. 2 T 67/2022)					65/3
F.R.Václavík - B.Šeda s.r.o. (Order No. 1/2023)	Ground-Penetrating Radar Survey of the Floor in the Church of the Assumption of the Virgin Mary in Hradec Králové					33/1

District Court in Rokycany (Ref. No. 3 T 32/2019)	Summoning of Expert Witness – District Court in Rokycany					9/0
Zimatechnik s.r.o. (Order No. 004/2023)	Performance of Traction Calculations for a Battery-Powered Vehicle					20/1
ČEPRO, a.s. (Order)	Expert Report 3Z/2023 ČEPRO – MU Hněvice 1					60/2
Císař, Češka, Smutný s.r.o. (Order)	ČEPRO – MU Hněvice 2					160/6
Jiří Ježek - LSJ	Determination of Residual Service Life Using FWD					13/0
Police of the Czech Republic, Regional Directorate of Hradec Králové	Summoning of Expert Witness – Ref. No. KRP-67926-105/TČ-2019-050271					9/0
Dipostel (France)	Material Testing_A1523 Test A					33/1
Dipostel (France)	Material Testing_A1533 Test B					33/1
CHVALIS, s.r.o. (Order No. OBHF23000291)	Processing and Analysis of Measured Electronic Data					250/10
Ministry of Defence of the Czech Republic (Order No. 39988/2023-4854, our ref. 0896/23)	Preparation of an Expert Report					10/0
District Court in Hradec Králové (Ref. No. 3 T 109/2020)	Summoning of Expert Witness – District Court in Hradec Králové					5/0
SCHÄFER-SUDEX, s.r.o. (Order No. 4100909268)	Material Analysis					7/0
District Court in Cheb (Ref. No. 2 T 67/2022)	Summoning of Expert Witness – District Court in Cheb (Ref. No. 2 T 67/2022)					7/0
District Court in Rokycany (Ref. No. 3 T 32/2016)	Review Expert Report – 3 T 32/2019 (Ref. No. 06Z/2022)					12/0
District Court in Tachov (Ref. No. 8 T 127/2021-3Z/2022)	Summoning of Expert Witness – Ref. No. 8 T 127/2021-3Z/2022					22/1
Czech University of Life Sciences Prague	Measurement of Railway Signalling Systems (16 points) in Harrachov and Špindlerův Mlýn					33/1
CEMEX Czech Republic, s.r.o. (Order No. 4508037937)	Analysis of Defects in Polished Concrete Flooring					3/0
SCHÄFER-SUDEX, s.r.o. (Order No. 4100927477)	Chemical Analysis					3/0
District Court for Prague 8 (Ref. No. 11 C 65/2016)	Summoning of Expert Witness – District Court for Prague 8 (Ref. No. 11 C 65/2016)					5/0
District Court for Prague 8 (Case No. 16 C 28/2020)	Summoning of Expert Witness – Ref. No. 16 C 28/2020					5/0

SCHÄFER-SUDEX, s.r.o.	Expert Opinion on Repair of a Claimed Defect: Surface Layer with Reddish-Brown Discoloration					4/0
SCHÄFER-SUDEX, s.r.o.	Chemical Testing					4/0
Kataforesis CZ, s.r.o. (email order)	Coating Analysis					5/0
DAKO-CZ, a.s. (Order No. 7002309101/LRA + 7002309283/LRA)	Fracture Analysis of Casting + Analysis of Disc Springs					9/0
Rolling Stock Lease s.r.o. (Contract No. 1568/22)	Predictive Maintenance of Locomotive Wheelsets (Vectron)					365/14
SKANSKA, a.s. (Order No. 4200836064/3287, Contract No. 0697/23)	Experimental Testing of Barrier Properties					15/1
České dráhy, a.s. (Order No. 4501273071, Contract No. 0940/23)	Material Analyses					176/7
Pražská strojírna, a.s. (Contract No. 0095/23)	Optimisation of Wheel-Rail Interaction in Tram Operations – Phase II					610/24
CZ LOKO, a.s. (Contract No. 0765/23)	Simulation Calculations for the DS2000 AC Railway Vehicle					250/10
České dráhy (Contract No. 0414/23, Order No. 4501078785)	Network Statement 2025					350/14
ŠKODA AUTO a.s. (Order No. 26815148/625/22.08.2023)	Dynamic Shear Testing of RSW					135/5
ŠKODA AUTO a.s. (SoD 0889/23)	Study on Hydrogen Utilisation for Material Handling Equipment at Škoda Auto					175/7
ČD, a.s. (Contract UPCE 1606/23) – related to SD524001	Licensing for the Use of the Computer Program <i>Rail Capacity Allocation Information System (IS PROK)</i>					4/0
Total		19 102/754	4 152/164	5 029/198	4 168/164	10 400/410

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:

Bainitic Steel with Enhanced Rolling Contact Fatigue Resistance (Patent)

A newly developed high-strength bainitic steel with a unique response to dynamic loads represents a significant innovation in materials engineering. Under rolling contact fatigue (RCF) loading, the material undergoes a controlled phase transformation, where blocks of carbon-enriched austenite are converted into martensite, resulting in continuous strengthening of the surface layer. This bainitic steel offers adjustable wear resistance while maintaining higher hardness compared to conventional pearlitic steel. The regulation of wear resistance is achieved through progressive surface hardening, which adapts to the character of the applied load – the greater the dynamic (impact) component, the stronger the deformation hardening.

The invention is intended for use in transport applications, particularly for components subjected to high RCF loads, such as the wheel-rail interface in railway and tramway systems. It builds upon previous successful material research led by Prof. Schmidová, specifically the development of high-strength bainitic steel for cast components of turnout structures, which was granted an international patent.

The new steel was developed with the support of DT Výhybkárna a strojírna a.s., which is now applying the material in its production. The patented version represents a new generation of this steel, designed to meet the increasing demands of higher transport speeds and axle loads while maintaining operational safety and economic feasibility. The development of such specialised steel requires extensive metallurgy research, experimental analyses, and long-term validation in real-world conditions. It involves continuous monitoring and evaluation of test sections as per operator requirements, as well as the development and testing of repair and maintenance procedures.

This material was also used in the HORIZON 2020 Shift2Rail S-CODE (Switch and Crossing Optimal Design and Evaluation) project as part of the demonstrator "Contact Layer of the Rail Profile with Enhanced Rolling Contact Fatigue Resistance". The new steel is expected to contribute to cost savings by reducing the number of rail-related failures, thereby lowering the risk of railway accidents caused by wheel or infrastructure defects. The successful implementation of this material in railway operations has already demonstrated reduced maintenance and repair costs. The research was conducted as part of the TAČR Rail Vehicle Competence Centre project.

ZK-PL-0 Wheel Profile

The ZK-PL-0 wheel profile was designed for tram operations in the Plzeň public transport network. It replaced the previous KP-1 profile, which had been associated with instability issues in newly

²⁹ See Terms definition.

introduced trams, manifesting as significant lateral oscillations of the entire vehicle during operation.

The new ZK-PL-0 profile was developed by adjusting the equivalent conicity of the wheel tread in the contact area. This modification was based on detailed measurements and analysis of the wheelset-track interaction, conducted by the research team. Following successful trial operations covering a total of 6.081 kilometres, the Czech Railway Safety Authority (Drážní úřad) issued Decision No. DUCR-19975/20/Mp on 14 April 2020, approving the implementation of the ZK-PL-0 profile for all trams operated by urban transport company in Plzeň (PMDP).

After this approval, wheel reprofiling was gradually carried out across the entire tram fleet of PMDP. The improved running behaviour was confirmed through simulations and validation tests conducted by rolling stock suppliers, including VÚKV for EVO2 trams and ŠKODA Transportation for 40T trams. As a result, all newly delivered vehicles are now equipped with the ZK-PL-0 wheel profile.

The reduction in lateral oscillations has led to enhanced passenger comfort, as well as a reduction in forces acting between the vehicle and the track, which in turn decreases wear and maintains track geometry for longer periods. These benefits have been documented in reports issued by PMDP including "Results of the Implementation of the ZK-PL-0 Wheel Profile" and "Evaluation of the Trial Operation". The research was conducted as part of a contract research project.

Wayside Diagnostics of Railway Vehicle Running Gear

The research outcomes of the Wayside Diagnostics of Railway Vehicle Running Gear project focus on the development of a diagnostic system for detecting and predicting running gear failures in railway vehicles during operation. The key results include:

- A diagnostic system capable of measuring, transmitting, storing, quantifying, and visualising diagnostic data from moving railway vehicles.
- Hardware for data collection, specifically designed to meet the operational requirements of railway environments.

The system's functionality and data collection capabilities were verified during the project through more than 500.000 recorded train passages, allowing for further development and refinement of the expert system.

The application potential of the system lies in several key areas:

- Increased safety – Early detection and localisation of faults contribute to improved railway safety.
- Reduced maintenance costs – Predictive diagnostics enable planned maintenance, reducing costs associated with unexpected repairs.
- Infrastructure protection – The system detects dynamic track loads and noise pollution, helping to preserve railway infrastructure.
- Reduction of noise and vibration impact – Detecting increased dynamic responses allows operators to identify and mitigate excessive noise and vibration affecting passengers and surrounding communities.

It is worth noting that the diagnostics of moving vehicles is a regulatory requirement for autonomous trains, such as those planned for Prague Metro Line D. The system is applicable to mainline railways, tram networks, special-purpose railways, and industrial sidings, with non-invasive track installation, offering an advantage over competing solutions. Due to its compact size and low energy consumption, the system is also suitable for light rail networks.

The FTE is now continuing its research in a follow-up project focusing on on-board diagnostics for railway vehicles.

Turnout 4.0

The Turnout 4.0 project aimed to develop a comprehensive autonomous diagnostic system for detecting and predicting the condition of turnout crossing noses, leveraging Industry 4.0 principles.

The Faculty of Transport Engineering contributed to the following key results:

- Development of the DISC-M diagnostic system for vehicle-based turnout monitoring, integrating onboard measurement, data transmission, storage, quantification, and visualisation of turnout crossing conditions from a moving railway vehicle.
- Hardware development of the DISC-M data collection unit, designed for real-world deployment.

The system's functionality and data acquisition performance were validated during the project, supporting the development of a comprehensive turnout crossing nose diagnostic system in collaboration with other project partners.

The anticipated benefits of the project outcomes include:

- Enhanced safety – The system enables early fault detection, contributing to improved railway safety.
- Extended lifespan of turnout crossing noses – Improved diagnostics facilitate better maintenance planning.
- Reduced maintenance and life cycle costs – Predictive diagnostics reduce unplanned maintenance and service disruptions. Given that infrastructure managers operate approximately 20.000 turnouts, the potential for cost savings is significant.

A follow-up TAČR project has now been launched, aiming to extend the diagnostic capabilities to movable turnout components, including switch rails, stock rails, and moveable-point frog turnouts, which are essential for high-speed rail applications. This advancement is expected to further enhance railway infrastructure diagnostics.

Predictive Maintenance of Railway Superstructure

The key outcome of the Predictive Maintenance of Railway Superstructure project is the development of a new technology for creating a contact layer on rails, designed to enhance dynamic durability and prevent the critical propagation of surface defects. This technology is applicable to railway and tramway tracks in sections exposed to increased dynamic loads.

A major advantage of this technology is that it eliminates the need for preheating when applied to standard rail steels, significantly reducing both time and energy consumption in the layer application process. It can be used for preventive measures to improve operational durability as well as for ongoing track maintenance, including repeated application if necessary.

The plasma welding process used in this technology allows for the application of materials that form a heterogeneous interface with the rail steel, acting as a barrier against sudden operational rail fractures. As a result, the technology also has the potential to enhance railway safety by reducing the risk of structural failures.

Josef Božek National Competence Centre for Land Transport Vehicles – Selected Outcome

As part of the Josef Božek National Competence Centre for Land Transport Vehicles project, the Faculty of Transport Engineering collaborated with SVOS spol. s r.o. on the design and manufacturing of a prototype load-bearing frame for a specialised vehicle. The prototype underwent testing

on a dynamic test rig to identify critical stress points affecting the structural integrity of the frame under dynamic loads.

These tests also served to verify the structural simulation models, ensuring their accuracy in predicting stress distribution and supporting the subsequent development of modified vehicle structures at SVOS spol. s r.o.

Research and Development of an Innovative Radome for Radar Antenna Systems Using Non-Conventional Materials

The outcomes of the Research and Development of an Innovative Radome project enable the expansion of radar system applications by integrating radome-covered antenna systems suitable for deployment in harsh weather conditions, including heavy precipitation, strong winds, and airborne sand environments.

The main benefit of this research is the elimination of dependence on foreign suppliers for this critical component. The validated production technology confirmed that the added value of the innovation remains within the Czech Republic, supporting domestic expertise and industry. The research results have already been successfully commercialised.

Software for Energy Consumption Calculation in Vehicle Operations

The developed software incorporates an algorithm for predicting energy consumption, particularly for electric vehicles, on a given route. When integrated into route planning systems, the algorithm can identify the most energy-efficient route while also estimating the remaining battery charge upon arrival at the destination or at any specific segment of the route. The algorithm was developed as part of the "Impacts of Low-Emission Mobility on Reducing Environmental Effects in Urban Agglomerations" (TAČR) project.

Tools for Implementing Converter-Based Railway Power Supply in 25 kV / 50 Hz Traction Networks

As part of the Tools for Implementing Converter-Based Railway Power Supply in 25 kV / 50 Hz Traction Networks project, advanced development is underway on software designed to optimise the settings of short-circuit protections and control characteristics of converters in 25 kV / 50 Hz traction networks powered by static frequency converters. This technology aims to enhance the reliability and safety of railway power supply systems, ultimately reinforcing the role of electric rail freight and passenger transport.

Development of Technology for Intelligent Freight Transport Flow Management (incl. Phase II)

The outcome of the Development of Technology for Intelligent Freight Transport Flow Management project is a comprehensive software solution for route planning, tracking completed transport routes, and logging driver activities.

The developed software, marketed under the PlanRoute brand by DIGITECH, is currently in use by MD logistika, the project applicant. Due to its versatile capabilities, the system has potential applications in logistics companies, transport firms, distributors, and manufacturers.

A key component of the software is the route optimisation library, developed by researchers at the University of Pardubice. The solution has been validated using real-world data from MD logistika and certified through a technology verification protocol.

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

Type of result ³⁰	Year of application	Name
National Patent	2019	Bainitic Steel with Enhanced Rolling Contact Fatigue Resistance
Comprehensive Research Report	2019	Analysis of Dynamic Effects of Vehicle Motion with Respect to Track Maintenance
National Patent	2020	Method for Quality Control of a Press-Fit Joint, Particularly for a Railway Wheelset – Wheel to Axle Connection
International Patent	2021	Jig for Mounting Samples in a Test Device for Material Contact Fatigue Tests
Pilot Operation, Technology (Verified Technology)	2021	Development of Technology for Intelligent Management of Freight Transport Flows (MD Logistika Project)
Comprehensive Research Report	2023	Determination of New Vehicle Resistance Values for Weight Limits
Software	2021	Simulation Software for Time Analysis of Traction Power Demand of Railway Vehicles
Prototype, Functional Sample	2021	Measuring System for Diagnosing the Temporal Evolution of Stress States in Continuous Welded Rail
Software	2022	Logistics Emissions Calculator – Chinese Localisation
Pilot Operation, Technology	2023	Research and Development of an Innovative Type of Radome Based on Unconventional Materials for a Radar Antenna System

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 Centre for Technology and Knowledge Transfer (CTKT)^[1] has been the central unit at the University of Pardubice (UPCE) supporting technology transfer and fostering cooperation with industry since 2012. The CTKT manages the university's industrial property portfolio, from invention disclosure and patent protection processes to negotiations with commercial partners, contract administration, and compliance monitoring. It also facilitates collaboration by negotiating partnership terms and providing comprehensive support for technology transfer activities.

Additionally, CTKT oversees the Proof-of-Concept funding system at UPCE, develops internal policies on intellectual property protection and technology transfer, and organises training events for researchers to enhance their awareness of these processes. To strengthen its cooperation with CTKT and industry, the Faculty of Transport Engineering (FTE) has appointed a Technology Transfer Ambassador, whose role includes actively identifying technology transfer opportunities, securing contract and collaborative research projects, streamlining the involvement of academic staff in technology transfer, participating in negotiations with industry partners, and expanding professional networks.

The FTE promotes its technologies by presenting them at technology seminars and conferences. Research teams actively participate in the university's Technology Day, an event designed to connect UPCE researchers with industry partners and showcase innovative technologies. The Faculty also contributes to UPCE's representation in the Regional Innovation Council of the Pardubice Region, the Steering Committee of the Hradec-Pardubice Agglomeration, and the Regional Standing Conference of the Pardubice Region, where collaboration with regional institutions is a key topic. Further cooperation includes partnerships with P-PINK (Pardubice Business and Innovation Centre) and the Chamber of Commerce of the Pardubice Region.

Despite these structured efforts, direct communication with potential partners remains the most effective way to identify new users of FTE research outcomes, building on an established network of industry connections. One of the key mechanisms for transferring research results into practice

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.

at FTE is contract research, which represents a major Faculty activity spanning a wide range of fields. Projects are commissioned by regional, national, and international partners and often build upon findings from applied research projects. The outcomes of contract research contribute to the development of vehicle components and propulsion systems, the optimisation of maintenance processes, and advancements in transport technologies and management strategies. This area also encompasses the resolution of complex engineering challenges, including accident and failure investigations.

FTE's contract research has also played a key role in optimising services of public importance. Notable examples include the long-term collaboration with the Czech Telecommunication Office on transit time audits and the development of a comprehensive railway capacity allocation system for Czech Railways (České dráhy, a.s.).

Additionally, several transport and technical studies have been conducted for selected municipalities. International contract research has also been a significant aspect of FTE's activities, including applied research projects for the Austrian company MBM Industry & RailTech GmbH. These projects focused on standardised and non-standardised tests of solid lubricants and friction modifiers in the wheel-rail contact interface, supporting their development and operational deployment.

Five Key Users of Research Outcomes and Examples of Application

Czech Railways (České dráhy, a.s.)

- Performance of the function of an independent capacity allocator for the national railway network owned by Czech Railways.
- Assessment of loading and unloading sites.
- Railway Network Statement for the preparation of the 2019/2020 timetable.
- Preparation of the Railway Network Statement for the 2021/2022 timetable and revision of the 2020/2021 statement.
- Railway Network Statements for 2023 and 2024.
- Material analyses.

Správa železnic (Railway Infrastructure Manager, SŽ)

- Determination of new vehicle resistance values for train weight limits.
- Revision of the Model Sheet Ž2, review of related standards and regulations, and alignment of the Ž2 Model Sheet with applicable legislation.
- Analysis of dynamic effects of running vehicles with regard to track maintenance.

Škoda Auto a.s.

- Dynamic testing at various temperatures.
- Failure analysis (leakage) of casting moulds – metallographic examination of damaged areas.
- Dynamic strength testing of adhesives.
- CO₂ emissions calculator for logistics.
- Study on the use of hydrogen for handling equipment at Škoda Auto.

CZ LOKO a.s.

- Simulations of running gear dynamic behaviour.
- Development of software for MUV 75.
- Simulation-based calculations for the DS2000 AC railway vehicle.

Czech Telecommunication Office

- Audit of transport time measurement.

Non-public, non-grant funding sources generated during the evaluation period include licence sales, commercialisation revenues, corporate donations, and sponsorships from collaborating companies.

HTML links to additional documentation:

[1] <https://www.upce.cz/en/ctkt/about-us>

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 License for the use of the computer program <i>Information System for Rail Capacity Allocation (IS PROK)</i>					100/4
COMMERCIALISATION Utilisation of results developed within the project <i>Research and Development of an Innovative Type of Radome Based on Unconventional Materials for a Radar Antenna System</i> , based on effective collaboration between FTE and ELDIS Pardubice, s.r.o.					234/9
DONATION Purchase of equipment and all necessary materials required for experimental measurements within the doctoral research of Ing. Michal Schmid (SVOS, spol. s r.o.)			118/5	9/0	23/1
DONATION Procurement of sensors, instruments, and small equipment for the purpose of advancing research activities and conducting experimental measurements in Sladkovského Street, Pardubice (MIROS Pardubice a.s.)				65/3	20/1
DONATION Purchase of a railway turnout (Chládek a Tintěra, Pardubice a.s.)					48/2
DONATION Support for the 30th Anniversary of the University (SUDOP PRAHA a.s.)					20/1
DONATION A series of lectures held as part of the celebrations marking 30 years since the establishment of the Faculty of Transport Engineering (ČD Cargo, a.s.)					50/2
DONATION Support for the project <i>Enhancing Online and Blended Learning at the Faculty of Transport Engineering</i> (ŠKODA AUTO a.s.)					38/1
DONATION Construction modifications and equipment for classroom DA-03005 (Elektrizace železnice Praha a.s.)					1699/67
DONATION Support for educational, scientific, and research activities at FTE – donation of a Škoda ENYAQ vehicle (ŠKODA AUTO, a.s.)					17/1
DONATION Support for educational, scientific, and research activities at FTE – renovation of the <i>Transport Operations Hall</i> for training future railway technologists, dispatchers, and controllers (MBM rail s.r.o.)					20/1
DONATION Support for scientific and research activities – conference participation fees (SATUM CZECH s.r.o.)	20/1				
DONATION Support for the promotion of educational, scientific, and research activities at FTE (Kiekert-CS, s.r.o.)	15/1				
SPONSORSHIP Support for higher education in <i>rail vehicle engineering</i> through interactive seminars and a professional conference (Siemens Mobility, s.r.o.)	75/3		75/3		75/3
Total	110/4	0	193/8	74/3	2344/92

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 of Transport Engineering (FTE) actively participates in public engagement and outreach activities aimed at both the general and professional public. A key focus is placed on inspiring primary and secondary school students to pursue STEM (Science, Technology, Engineering, and Mathematics) disciplines.

Throughout the year, faculty members visit secondary schools, delivering popular science lectures showcasing their latest research findings. Selected examples of FTE's outreach initiatives include:

European Researchers' Night – This Europe-wide public engagement event is held annually to bring science closer to the general public. At the University of Pardubice, it regularly attracts hundreds to thousands of visitors, offering them a chance to explore research laboratories and facilities. Since 2014, the FTE has been actively involved, with several editions taking place directly at the Educational and Research Centre in Transport (ERCT). The event features interactive demonstrations, experiments, and exhibitions of research project outcomes, with contributions from all faculty departments.

Science and Technology Fair – Organised annually by the University of Pardubice in June, this event takes place in the city centre and is aimed at the general public, with a particular focus on primary and secondary school students from across the Pardubice Region. The FTE is a regular and active participant, offering a fun and interactive programme designed to spark students' interest in science and research. The event typically attracts 500 to 1.000 visitors.

University of the Third Age (U3V) Lectures – The FTE has a long-standing tradition of hosting lectures for senior citizens, dating back to 2007. These lectures cover a wide range of technical subjects and are highly popular, with an average of 70 participants per semester. Between 2019 and 2023, more than 800 seniors attended the programme. Since 2014, in addition to these lectures, the Faculty has also offered special interest courses for both senior citizens and the general public, covering specific technical topics in greater depth. Over the years, more than 2.000 participants have enrolled in these courses.

Specialised Seminars – Throughout the year, the Faculty organises seminars for both experts and the general public, covering various aspects of transport history. In 2023, to mark the Faculty's 30th anniversary, a series of three public lectures was held. Additionally, faculty members regularly deliver lectures at seminars organised by ČKAIT (Czech Chamber of Authorised Engineers and Technicians) and JČMF (Union of Czech Mathematicians and Physicists) and take part in discussions on the UPCE On Air university podcast.

FTE Summer Day Camp – Organised between 2015 and 2022, this camp introduced primary and secondary school students to topics in transport, electrical engineering, and materials science, with hands-on activities such as building a radio, an electronic dice, a wireless speaker with a radio, a mobile-controlled car, and working with leather and steel. Between 2019 and 2022, 38 students attended the camp, and over its full duration, 75 students took part.

"A Ride Through FTE" – FTE's Open Day for Secondary Schools – This event introduces secondary school students to study opportunities, research laboratories, and teaching methods at the Faculty. The programme is tailored to the needs of each school, based on the preferences of their teachers and students' areas of interest. Activities include logistics-based building kits, expert lectures, and guided tours of research facilities. Since its launch, the event has hosted more than 20 visits, involving approximately 500 students.

Training Courses for Secondary School Teachers – Since 2015, the FTE has organised courses for secondary school teachers, providing the latest insights into all aspects of transport. Between 2019 and 2023, 108 teachers participated in these courses, with a total of 155 teachers having attended since the programme's inception.

Open Days at the Faculty of Transport Engineering – These events provide prospective students with insight into study opportunities at the Faculty while also serving as an important platform for promoting science and research. The programme includes presentations of research projects, demonstrations of modern laboratories, and exhibits of the latest technologies used in addressing current challenges in transport and logistics.

Gaudeamus Higher Education Fair – The FTE annually participates in the Gaudeamus education fair in Brno and Prague, providing two opportunities each year to engage with prospective students. Alongside presenting its study programmes, the Faculty contributes to the 'Science for Life' section, where visitors can take part in hands-on technical activities led by faculty researchers. One of the highlights is a locomotive start-up simulator designed to operate under challenging conditions, showcasing the real-world applications of science and technology.

Demonstration Rides of the Faculty's Experimental Rail Vehicle for the Public at Mladějov Industrial Railway – Organised by members of the Department of Electrical and Electronic Engineering and Signalling in Transport, this initiative is part of selected events hosted by the Mladějov Industrial Railway Museum.

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 Faculty has a very impressive applied research and contract research with national and international impact. The fact that the financial support is increasing over the years indicates that the FTE is following the right strategy. It is recommended to deepen and possibly expand foreign contract research with other partners. In the case of domestic partners, it is recommended to choose a better strategy to increase an income from the contract research."

The Faculty continues to focus on securing and conducting contract research projects. A detailed overview of these projects, including international collaborations, is provided in Table 3.3.2. The total financial volume of contract research during the evaluation period exceeded CZK 45 million (EUR 1.775.000). The newly established role of the Faculty's Technology Transfer Ambassador has proven effective in acquiring contract research projects. This position is responsible for actively identifying opportunities, participating in negotiations with industry partners, and expanding professional networks.

"The Faculty produces important results with prospective impacts on professionals mainly in the railway transportation domain. This strategy should be developed with more visible direct impacts. It is recommended to focus on a more effective application of research results (a number of patents), in the form of obtaining licenses. It is obvious that this is primarily question of a business model, because the results themselves are on a good level."

The Faculty continues to support and promote the development of research outcomes with practical applications. A detailed list of these outcomes is provided in Table 3.4.1. These results are actively presented at technology seminars and conferences, while new industry users are sought out, and direct communication with potential partners is strengthened through an established network of contacts. The FTE also actively collaborates with the University of Pardubice's Centre for Technology and Knowledge Transfer (CTKT). A key example of this collaboration is the University's Technology Day, an event designed to connect UPCE researchers with industrial partners and showcase innovative technologies. The FTE research teams participate in this event each year.

"The quality, diversity and volume of collaboration with non-academic partners are very high; it should definitely be maintained in the future. However, this very favourable situation, associated with an excellent applied research, does not lead to significant results in terms of patents or commercialisation of products. It is recommended to streamline the system of transferring research results into practice at the university level. At the FTE level, it is suggested to create a position for an expert – researcher, who will focus on the transfer of results into practice."

The FTE closely collaborates with the CTKT and has established the position of Technology Transfer Ambassador, whose role is to actively seek out technology transfer and contract research opportunities, provide guidance on the process for academic staff, participate in negotiations with partners, and support professional networking. The ambassador also assists in organising the university's Technology Day. Furthermore, the ambassador has been actively involved in European projects INVENTHEI and DeepINVENTHEI, aimed at supporting talented innovators and technology-focused start-ups. An invaluable part of these projects was sharing best practices within a consortium comprising the University of Porto (lead coordinator), the Science and Technology Park

of the University of Porto, The University of Sheffield, INOVA+ Innovation Services SA, TTK University of Applied Sciences, University of Santiago de Compostela, Valahia University of Targoviste, Silesian University of Technology, Zhytomyr Polytechnic State University, and the School of Engineering at Jönköping University.

"The national and international visibility of the Faculty and its staff is limited and should be improved. It is recommended to increase the direct contact and collaboration with universities abroad and to present research results at international conferences."

Several notable successes have been achieved in this area, with a comprehensive summary provided in Section 3.2.

"Activities of the Faculty in the area of popularisation are on a very good level. It is recommended to continue in those activities."

The faculty continues to engage intensively in public engagement and outreach activities (described in Section 3.6), has established a PR officer position, and supports the involvement of academic staff in these initiatives.

The findings and discussions from the previous evaluation period have also been incorporated into various internal faculty systems. The FTE evaluates the research performance of academic staff through a Comprehensive Evaluation System (KHP), which assesses both publication and applied research outcomes, as well as participation in research projects. International collaboration is explicitly incentivised within this system.

Based on KHP results, an annual performance review is conducted for faculty staff by their supervisors. A similar approach is used in the allocation of special doctoral student scholarships, ensuring that research excellence is appropriately recognised and rewarded. Additionally, the allocation of financial resources to faculty departments is linked to KHP outcomes.

To foster research and development activities, the Faculty has established a dedicated research fund within its budget, which provides financial support for expenses related to the publication of scientific research results. Furthermore, the Faculty has identified and provides targeted support to research teams with consistently outstanding results, many of which maintain long-term collaborations with international partners. More information about these teams (members, activities, research topics, results) can be found under the following links:^[1-4]

HTML links to additional documentation:

[1] Research team of Eva Schmidová:

<https://dfjp.upce.cz/en/dfjp/research-team-of-eva-schmidova>

[2] Research team of Özgür Yurdakul and Ladislav Řoutil:

<https://dfjp.upce.cz/en/dfjp/research-team-of-ozgur-yurdakul-and-ladislav-routil>

[3] Research team of Petr Voltr and Tomáš Michálek:

<https://dfjp.upce.cz/en/dfjp/research-team-of-petr-voltr-and-tomas-michalek>

[4] Research team of Libor Švadlenka:

<https://dfjp.upce.cz/en/dfjp/research-team-of-libor-svadlenka>

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)
Faculty Website	3.1, 3.2, 3.3	https://dfjp.upce.cz/en
ERCT Website	3.1	https://dfjp.upce.cz/en/jptf/erct.html
SIZI Website	3.2	https://www.sizi.cz/home
S-CODE project information [CORDIS]	3.3	https://cordis.europa.eu/project/id/730849
eBRT2030 project website	3.3	https://ebrt2030.eu
CK02000177 project description [STARFOS]	3.3	https://starfos.tacr.cz/en/projekty/CK02000177
CK02000218 project description [STARFOS]	3.3	https://starfos.tacr.cz/en/projekty/CK02000218
TN01000026 project description [STARFOS]	3.3	https://starfos.tacr.cz/en/projekty/TN01000026
CK01000091 project description [STARFOS]	3.3	https://starfos.tacr.cz/en/projekty/CK01000091
CK01000060 project description [STARFOS]	3.3	https://starfos.tacr.cz/en/projekty/CK01000060
TK02010009 project description [STARFOS]	3.3	https://starfos.tacr.cz/en/projekty/TK02010009
EG17_107/0012371 project description [STARFOS]	3.3	https://starfos.tacr.cz/en/projekty/EG17_107%2F0012371
FV10724 project description [STARFOS]	3.3	https://starfos.tacr.cz/en/projekty/FV10724
CTKT Website	3.5	https://www.upce.cz/en/ctkt/about-us
FTE Research Teams Website	3.7	Research Teams of Faculty of Transport Engineering University of Pardubice
Research team of Eva Schmidová	3.7	https://dfjp.upce.cz/en/dfjp/research-team-of-eva-schmidova
Research team of Özgür Yurdakul and Ladislav Routil	3.7	https://dfjp.upce.cz/en/dfjp/research-team-of-ozgur-yurdakul-and-ladislav-routil
Research team of Petr Voltr and Tomáš Michálek	3.7	https://dfjp.upce.cz/en/dfjp/research-team-of-petr-voltr-and-tomas-michalek
Research team of Libor Švadlenka	3.7	https://dfjp.upce.cz/en/dfjp/research-team-of-libor-svadlenka

SELF-EVALUATION REPORT FOR MODULES 4 AND 5

HIGHER EDUCATION INSTITUTION NAME: UNIVERSITY OF PARDUBICE
COMPANY REGISTRATION NUMBER (CRN): 00216275

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:

University of Pardubice (UPCE)^[1] is a public higher education institution with the corresponding self-governing and executive bodies, ensuring a balanced distribution of powers and responsibilities between centralised units and faculties. It comprises seven faculties (with the year of establishment in parentheses):

- Faculty of Chemical Technology (FChT, 1950)
- Faculty of Economics and Administration (FEA, 1991)
- Faculty of Transport Engineering (FTE, 1993)
- Faculty of Arts and Philosophy (FAP, 2001)
- Faculty of Restoration (FR, 2005) – based in Litomyšl
- Faculty of Health Studies (FHS, 2007)
- Faculty of Electrical Engineering and Informatics (FEEI, 2008)

Administrative functions are primarily centralised. Research, development, and creative activities (as well as educational activities) are managed centrally only in terms of methodology and through shared information systems.

In the organisation and management of R&D&I, the **University's Executive Board** performs the following roles:

- I. Decision-making, involving the determination of the fundamental strategic direction for the University's activities in both the long-term and short-term horizons.
- II. Coordination and support, involving methodological assistance and the provision of administrative and project-related services. These functions are carried out through:
 - A. Centrally established Rectorate units:
 - a) Office for Research and Development (ORD)
 - b) Centre for Technology and Knowledge Transfer (CTKT)
 - c) Office for Development and Project Activities (ODPA)
 - d) Office for International Relations (OIR)

¹ A graphical representation of the organisational structure will be provided as an annex.

- e) University Library (UL)
- f) Legal Office (legal support for R&D&I)
- g) Office for Promotion and External Affairs (public engagement and dissemination of R&D&I outcomes)

B. University-wide information systems:

- a) Grants and Projects Information System (GAP)
- b) Personal Bibliographic Database Information System (PBD)
- c) Academic Staff Evaluation Information System (Power BI)
- d) Information System for Monitoring Indicators in the University's Strategic Plan (Power BI)
- e) Support for R&D&I through the Internal Grant Agency [IGA]

III. Evaluation and motivation, involving the regular assessment of results achieved by individual units of UPCE, both on an annual basis and in medium- to long-term horizons (5–10 years, depending on the type of activity).

IV. Conceptual support for activities with a cross-disciplinary impact, such as the University Doctoral School, mentoring programmes, and the HR Award initiative.

The **R&D&I agenda** falls under the responsibility of the Vice-Rector for Research, who directly oversees ORD, CTTZ and ODP. Additionally, the Vice-Rector serves as the Chair of the **Internal Grant Agency (IGA)**, the **Commercialisation Board (CB)**, and the **Library Board (LB)**. The Vice-Rector for Research and Creative Activities is responsible for discussing, approving, and implementing strategic R&D&I documents, as well as for evaluating R&D&I results, including their nominations for national assessments. They work systematically to coordinate and collaborate on R&D&I activities with the respective Vice-Deans for Research across all faculties.

Given the diversity of disciplines cultivated at UPCE, disciplinary strategies and direct management of R&D&I are carried out at the faculty level. Research teams are typically established within discipline-specific departments or institutes. Each faculty has developed:

- 1) Its own timeline for evaluating R&D&I results, conducted on an ongoing basis (annually), in the short term (over 2–3 years), and in the medium term (over 5–10 years).
- 2) A system of incentive mechanisms, ensuring that the quality and quantity of R&D&I results are recognised at the faculty, department, institute, individual, and team levels.

The internal organisational and governance structure, strategic plan, system of incentive mechanisms, and faculty-specific R&D&I management procedures are regulated by a set of internal regulations. These regulations apply either university-wide or specifically to individual faculties and are available in both Czech and English.

In addition to the standard conceptual and decision-making mechanisms mandated by law, UPCE has established a five-member **International Scientific Council [ISC]^[2]**, composed of distinguished foreign researchers whose specialisations align with the University's key R&D&I disciplines. The ISC serves in an advisory capacity and, beyond *ad hoc* consultations, convenes at least once per year for a formal meeting. It provides expert opinions on conceptual R&D&I matters, evaluates selected major R&D&I results submitted by the University's units as part of ongoing assessment, and – drawing on international best practices – issues recommendations to the Rector on the future development of R&D&I.

Further details on other independent external advisory bodies and their activities can be found in Section 4.3.

HTML links to additional documentation:

[1] [Organisational Structure | University of Pardubice](#)

[Organisational Chart | University of Pardubice \(upce.cz\)](#)

Organisational Guidelines UPCE: [smernice c. 6-2021 organizacni rad upce ve zneni dodatku c. 2 eng.pdf](#)

[Statutes of the University of Pardubice | University of Pardubice \(upce.cz\)](#)

Annual Report 2023: <https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M4>

Organisational Structure UPCE: [pr. c. 1 organizacni struktura univerzity eng.pdf \(upce.cz\)](#)

[Strategic Plan 2021+ | University of Pardubice \(upce.cz\)](#)

[2] Rules of Procedure of the University of Pardubice International Scientific Council:

<https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M4>

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 of 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.

² Student grants, support for PhD students, postdocs and early career scientists.

Self-assessment:

Incentive Measures and Tools for Supporting High-Quality R&D&I

The fundamental incentive mechanism for fostering high-quality R&D&I consists of:

1. A system of individual **financial rewards** for academic and research staff, and
2. The **allocation of institutional funding** for Long-Term Conceptual Development of Research Organisations (LCDRO) among high-performing and top-performing academic/research staff and their teams (see internal grant schemes and the system for supporting research excellence).

Financial incentives and remuneration for individual R&D&I staff are based on the quality of their research outputs, professional development, and comprehensive evaluation, in accordance with the *Internal Salary Regulations of UPCE*^[1] These factors influence three salary components:

- a) **Basic salary** is determined by the qualification level (Professor, Associate Professor, Assistant Professor, Assistant) and is uniform across all staff members at UPCE, regardless of their research discipline.
- b) **Personal allowances** for R&D&I staff, which form part of the salary, are generally set for a period of one year. At the faculty level, guidelines (directives) are developed to take into account both the quality and quantity of research and creative outputs, as well as engagement in project implementation and preparation, international recognition, and other factors over the short- and medium-term. Based on these criteria, successful researchers are rewarded. The *Academic Staff Evaluation Information System – Primary Information* (Power BI), an extension of UPCE's information systems, is used for the assessment of academic and research staff.
- c) **Extraordinary bonuses** serve as a flexible incentive tool, allowing for one-off recognition of exceptional publication or other research achievements. These achievements are further acknowledged annually at both the faculty and university levels (Dean's and Rector's Awards, which include financial rewards). At the faculty level, substantial financial incentives are typically awarded for receiving the highest grades 1 and 2 for excellent research results assessed within the nationwide evaluation under Module 1.

In addition to the financial incentives mentioned above, UPCE also employs:

3. **Non-financial incentives**, primarily in the form of a high-quality research environment and infrastructure, including:
 - A well-functioning work environment,
 - State-of-the-art research equipment,
 - Support for international mobility (for research activities in archives, libraries, and scientific collaborations, as well as for participation in conferences and workshops),
 - A positive and efficient workplace atmosphere,
 - Employee benefits, such as subsidised meals, and
 - The prestige of working at a higher education institution.
4. **Project and administrative support** (see project funding).

The university-wide framework for incentive measures in R&D&I is governed by the internal regulation *Rules of the Quality Assurance and Evaluation System of Educational, Creative and Other Related Activities*^[2].

Internal Grant Schemes

- a) The strategic approach of UPCE aims to minimise the administrative burden on university staff when allocating institutional funding for Long-Term Conceptual Development of Research Organisations (LCDRO). Therefore, the majority of institutional funding for LCDRO is efficiently distributed among faculties and subsequently among departments/institutes and specific research teams based on their achieved results and ongoing projects. This approach provides department, institute, and research team leaders with flexibility, allowing them to use funds effectively and, most importantly, with operational agility, even for research projects with a higher degree of risk.
- b) The most significant internal grant scheme is managed by the *Internal Grant Agency* (IGA), which allocates funding for specific university research through an internal competitive grant scheme. This funding primarily targets doctoral students.
- c) Regular grant competitions are organised for doctoral students and other early-career researchers publishing in English, providing funding for research stays abroad (doctoral students are required to write their dissertations in English to be eligible). Similarly, support is available for all researchers for exploratory research trips, including participation in conferences, workshops, and internships.
- d) The *System of Research Stimulation for Students-Young Researchers*^[3] defines support measures for early-career academic and research staff at UPCE. This framework establishes a unified system for supporting early-career researchers, including both domestic and international postdoctoral researchers and doctoral students. The primary aim is to ensure that these researchers meet both formal and discipline-specific requirements for their involvement in teaching, research, and creative activities at UPCE (for details, see Section 4.13).
- e) To support young researchers, their integration into senior research teams is actively facilitated. A notable example of best practice is the *conditio sine qua non* requirement, which mandates the participation of doctoral and postdoctoral researchers in excellent research teams when applying for support.
- f) Faculty-level internal funding instruments represent a key financial incentive tool, with the most notable schemes including support for excellent research teams, funding for proof-of-concept projects, and financial support for the preparation of ERC project proposals. The list of research teams reflects the scientific fields in which UPCE demonstrates excellence in research^[4].
- g) Special support measures are in place for applicants for prestigious projects such as ERC grants. In addition to the above-mentioned support, these applicants receive assistance from both the project office of their faculty and the university-wide ODPa, which work in close collaboration. Applicants who advance to the second round (interview stage) have the costs of an external international consultant covered. In the event of a successful application, further methodological support is provided for project implementation, financial management, administration, and reporting. Consultations with the Technology Centre in Prague have also been arranged.

System for Supporting Research Excellence, Strategy, and Opportunities for Establishing New Research Teams

Each faculty has its own specific systems and rules, typically set out in internal regulations^[5]. However, the fundamental principles of supporting high-quality publications and excellent research teams are consistent across faculties.

For example, at the Faculty of Chemical Technology (FChT), funding for research and development is allocated annually to individual departments based on a calculation that considers each unit's contribution to research results over the past five years. The calculation of financial contributions to departments (as specified in Article 5 of Directive No. 3/2024) consists of:

- 60% based on results assessed under Module 1 of the 17+ methodology and published outputs. Only publications appearing in journals ranked in the top two quartiles (Q1, Q2) according to the Article Influence Score (AIS) classification within the FORD system are considered.
- Weighting for results in Module 1:
 - Grade 1 and 2 (world-leading and excellent) → Weight 2
 - Grade 3 → Weight 1
 - Grades 4 and 5 (nationally recognised results and results that do not meet the national standard) are not counted.
- The same weighting applies to publications:
 - Q1 publications → Weight 2
 - Q2 publications → Weight 1
- 40% based on acquired grant projects, as well as revenues from commercialisation, contract research, and service activities from the previous year.

Thus, the calculated normative funding reflects the overall research performance of a given unit. The internal distribution of funds within a department is at the full discretion of the head of the department/institute.

Support for Research Teams (RTs)

At the Faculty of Electrical Engineering and Informatics (FEEI), a dedicated budget line for *Supporting Research, Development, and Innovation Activities* is allocated annually to support both new and existing research teams (RTs).

- Establishing a New Research Team:
 - An academic staff member wishing to establish a new RT must submit a research proposal, team composition, and a three-year research plan to the Vice-Dean for Research and Creative Activities by 31 January.
 - The Faculty Executive Board, in collaboration with the head of the respective unit, decides whether to recognise and fund the RT.
- Continuation of Existing Research Teams:
 - The heads of existing RTs must submit an activity report for the previous year and an updated activity plan to the Vice-Dean for Research and Creative Activities by 28 February.
 - The Vice-Dean evaluates whether the RT meets the funding criteria. If a research team fails to meet the required standards, does not align with the faculty's research objectives, or lacks sufficient international-level research output, funding may be discontinued.
- Continued support for RTs beyond the third year depends on:
 - Participation in research projects,

- Publications in Q1 and Q2 journals (AIS WoS classification), and
- Commercialised/licensed research outputs from the past three years.

The funding allocation is determined based on a weighted formula that accounts for both the recency and significance of research outputs:

Time Weighting of Research Outputs ("Year Weight")

- Outputs from the most recent year (n) → 50%
- Outputs from the year before last (n-1) → 30%
- Outputs from two years prior (n-2) → 20%

Weighting by Output Category ("Output Weight")

- Participation in projects → 0.2
- Publication outputs → 0.3
- Commercialised licences → 0.5

The funding allocation for each research team is calculated using the following formula:

$$\text{Finance}_{\text{team}} = \frac{\sum_{\text{outputs}} \sum_{\text{years}} (\text{number of outputs} \times \text{year weight} \times \text{output weight})}{\sum_{\text{outputs}} \sum_{\text{years}} (\text{total number of outputs} \times \text{output weight})} \times \text{total allocated budget}$$

Financial rewards from RT funding can only be disbursed once the required publication target has been met, specifically the publication of at least one article in a Q1 or Q2 journal within the FORD classification for FEEI. The minimum required number of publications corresponds to the research team's average Full-Time Equivalent (FTE), rounded down.

For detailed regulations on the allocation of the entire LCDRO funding component, see Section 4.11.

System of Administrative Support and Knowledge Transfer in R&D&I

The support for research and creative activities at UPCE is provided by data analysts (CITS) and Open Science support mechanisms (University Library). Additionally, the **PR Office** assists with the public engagement and dissemination of research results. Below, we present key units and activities that ensure a high-quality research infrastructure in greater detail.

The **Centre for Technology and Knowledge Transfer (CTKT)** is the University's primary unit responsible for knowledge transfer and the commercialisation of research results. The CTKT team consists of two business and innovation advisors, an intellectual property manager, and a project manager overseeing proof-of-concept projects across UPCE faculties. The operations of the CTKT team are funded through Long-Term Conceptual Development of Research Organisations (LCDRO) resources. In 2024, an amount of CZK 3.5 million was allocated for CTKT operations and activities.

At UPCE, **proof-of-concept projects** serve as a key tool for technology and knowledge transfer. These projects aim to support the commercial application of R&D&I results, including:

- Conducting external analyses,
- Developing functional prototypes,
- Validating technologies in real (or semi-real) operational environments,
- Obtaining intellectual property protection, and
- Implementing marketing presentations of R&D&I results, such as conference and trade fair showcases.

These activities have been partially funded through the university-wide project TP01010012, entitled "*Development of a Proof-of-Concept Project Support System at the University of Pardubice*",

supported by the Technology Agency of the Czech Republic (TA ČR) GAMA2 programme. The project, implemented until 31 December 2022, aimed not only to support specific research outputs but also to develop an internal system for managing R&D&I results at the University. The project contributed to further streamlining the system for supporting the application-oriented research results of academic teams^[6].

To enhance technology transfer, UPCE has revised key internal regulations and introduced transparent and equitable conditions for accessing funds from the University's Licensing Reserve, which supports intellectual property protection and the commercialisation of research results. As part of the TP01010012 project, a total of 14 sub-projects from the Faculty of Chemical Technology (FChT), Faculty of Electrical Engineering and Informatics (FEEI), Faculty of Health Studies (FHS), and Faculty of Economics and Administration (FEA) received funding. One notable outcome of these activities was the establishment of the spin-off company Lipidica (see Section 4.12).

Since August 2024, the CTKT team has been implementing a follow-up project, TQ11000012, entitled "*Supporting the Commercialisation System through Proof-of-Concept Projects at the University of Pardubice*". This project, co-funded by the TA ČR SIGMA DC1 programme, aims to increase the involvement of early-career academic and research staff in proof-of-concept projects, as well as to enhance their participation in strategic decision-making on research commercialisation and industry collaborations.

UPCE has also focused on enhancing the societal impact of its research activities by optimising its technology transfer, innovation, and entrepreneurship support system. As part of this effort, the University has established a **network of Technology Transfer and Business Support Ambassadors** ("Innovation Ambassadors") across selected faculties. The project "Building Systems and Capacities for the Effective Transfer of Research and Innovation Results into Practice at the University of Pardubice", Reg. No. CZ.02.01.02/00/22_009/0004892 (supported under the *Smart Accelerator+ / Pardubický kraj inovativní* project), has significantly contributed to achieving this goal. Drawing on experiences from this project and best practices, UPCE aspires to develop a methodology for supporting application-driven activities of students and academic staff at the institutional level.

System of Project Acquisition Support

Administrative and advisory support for project applications and acquisition is provided by central university units, primarily the **Office for Research and Development (ORD)** for national projects and the **Office for Development and Project Activities (ODPA)** for international projects, in collaboration with faculty-based project offices and project managers.

The **ORD** supports research activities and projects at the national level by:

- a. Providing administrative and methodological support in the preparation and submission of project applications to national funding bodies,
- b. Assisting in identifying funding opportunities for research activities at UPCE, and
- c. Offering administrative support throughout the entire project lifecycle.

ORD also promotes interdisciplinary and interfaculty collaboration, with the most notable example being the organisation of *Workshops on Interfaculty and Interdisciplinary Collaboration*. Additionally, ORD implements analytical tools to support national and international benchmarking of the University and its faculties. Based on the collected data, ORD analyses the quality and trends in research performance at UPCE. Furthermore, ORD administers the Internal Grant Agency (IGA) agenda and the Student Grant Competition (for details, see Section 4.13).

The **ODPA** is responsible for coordinating the preparation, submission, implementation, completion, and sustainability of projects (the project cycle) within:

- a) International cooperation programmes in research, development, and related education, and
- b) Development programmes announced by national or international funding bodies.

The ODPa provides:

- Information on funding calls, their requirements, and relevant submission platforms,
- Methodological and advisory support throughout the project cycle,
- Management and administration of university-wide projects and cross-faculty initiatives.

In collaboration with ORD, ODPa is involved in the management of the university-wide project registration system, known as the Grants and Projects Module, which operates within the VERSO information system. ODPa also organises training courses on project preparation, team leadership, and other related topics for early-career and less experienced academic and research staff, as well as courses on project administration and financial management for faculty-based project support staff.

Currently, the ODPa has 8 staff members, the ORD has 2, and faculty-based project support services comprise nearly 30 employees.

A notable example of support for acquiring prestigious international projects (such as ERC and Horizon grants) is the ongoing WIDE AcrossEU project, implemented at ODPa (05/2024 – 08/2027). This project aims to position universities from Widening countries at the level of Western institutions in terms of project preparation, coordination, and success rates in securing funding.

Lastly, the **HR Office** also plays a role in supporting research by ensuring a high-quality working environment for researchers. Based on its HR Award certification, it implements strategic documents and action plans aimed at strengthening human resources in research and development. The office ensures open and transparent recruitment processes and continuous support for research staff, thereby enhancing the overall work environment for researchers at UPCE (for more details, see Sections 4.6 and 4.7).

Internationalisation of Research and the University

An open and high-quality research environment is further strengthened by the ongoing internationalisation of UPCE as a whole and the continuous expansion of support services for researchers, provided by the **Office for International Relations (OIR)**.

The OIR assists international students and researchers even before their arrival in the Czech Republic, offering support with the visa process, health insurance arrangements, accommodation, and other logistical matters. Throughout their stay at UPCE, the office helps with a wide range of personal and administrative issues, including residence permits, housing, banking, taxes, insurance, medical care, integration into Czech society, and overcoming language barriers. This comprehensive support facilitates a smooth adaptation to both the new living environment and the academic setting at UPCE.

Since 2017, UPCE has provided the *University of Pardubice Guidebook*, a detailed information resource covering residence, work, and daily life at the University, in the city, and its surroundings^[7]. The adaptation and integration of international members of the academic community is also supported through events such as:

- The University-wide *Orientation Week*,
- *Welcome Meetings* at faculties for international students,
- Regular integration activities organised by OIR several times a year, and
- The inclusion of international students and staff in all university-wide events.

The OIR also supports the activities of the Healthcare Club^[8], collaborating primarily on ensuring access to adequate healthcare in the Czech Republic. Additionally, the OIR serves as a regional partner of the EURAXESS advisory and consultancy network, and cooperates with the *Department for Asylum and Migration Policy in Pardubice* as well as the *Centre for the Integration of Foreigners in the Pardubice Region*.

The **Language Centre** provides Czech language courses and cultural orientation sessions for international students and staff to facilitate cultural adaptation. Simultaneously, UPCE has strengthened English language training for employees, including administrative and technical staff. A bilingual (Czech-English) system is gradually being introduced in the University's information system.

The internal internationalisation of UPCE continues in line with the *Strategy and Implementation Framework for the Internationalisation of the University of Pardubice 2021+*, implemented within the framework of the "HR Strategy for the Development of the University of Pardubice" project (see further details below).

HTML links to additional documentation:

[1] Internal Salary Regulations: <https://www.upce.cz/en/internal-wage-regulations>

[2] Rules of the Quality Assurance and Evaluation System of Educational, Creative and Other Related Activities: <https://www.upce.cz/en/rules-of-the-quality-assurance-and-evaluation-system-of-educational-creative-and-other-related>

[3] System of Research Stimulation for Students-Young Researchers: <https://www.upce.cz/en/system-of-research-stimulation-for-students-young-researchers>

[4] Excellent R&D teams.

FTE: [Research Teams at Faculty of Transport Engineering | University of Pardubice](#)

FChT: [Excellent Scientific Teams | University of Pardubice](#)

FEA: [Research Teams | University of Pardubice](#) (<https://fes.upce.cz/en/fes/research-teams>)

FEEl: [Petr Doležel Research Team | University of Pardubice](#)

[Tomáš Zálabský Research Team | University of Pardubice](#)

[Tomáš Brandejský Research Team | University of Pardubice](#)

FAP: <https://ff.upce.cz/en/ff/scientific-teams>

[5] Directive on Excellence Support: <https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M4>

[6] <https://www.upce.cz/en/proof-of-concept-projects>

[7] Preparing to Come Guidebook: <https://www.upce.cz/en/preparing-to-come>

[8] UPCE Healthcare Club: <https://fzs.upce.cz/fzs/upce-healthcare-club>

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:

Quality Assurance System – Overview

The entire quality assurance system, including the process for adopting corrective measures and monitoring their implementation, is defined by the internal regulation *Rules of the Quality Assurance and Evaluation System of Educational, Creative and Other Related Activities of the University of Pardubice*^[1], along with additional related internal regulations.

The primary evaluation of research quality is linked to the national system for research and development evaluation, which is defined and implemented in accordance with the applicable *Methodology for the Evaluation of Research, Development, Innovation, and Completed Programmes*, as published by the **Council for Research, Development and Innovation**.

Quality assessment is conducted at:

- The university, faculty, and departmental levels, and
- The level of academic and research staff, whose research-related activities are governed by the *Code of Good Research Practice of the University of Pardubice*^[2].

The evaluation also assesses research excellence in both national and international comparisons.

In 2019, the University of Pardubice reached two major milestones in its internal evaluation of research and creative activities:

1. The development and approval of the *Framework for Research Activities*, which is Appendix 2 of the *Implementation Schedule for the UPCE Strategic Plan*^[3]. This document defines the key disciplinary priorities for basic and applied research at each faculty and establishes fundamental principles for institutional funding allocation in research and development.
2. The identification of the most significant researchers across faculties, based on an analysis of long-term research performance (see the section on excellent research teams above^[4]).

One of the internal evaluation tools used at the faculty level is a system for assigning qualitative attributes to research outputs, as defined in the internal regulation *Records of Research and Creative Outputs of Employees and Students of the University*^[5].

Internal Quality Evaluation

Quality assurance and evaluation fall under the authority of the **University of Pardubice Internal Evaluation Board**^[6], an independent body established by statute. In quality-related matters, the Board serves as both the decision-making authority and a methodological and supervisory entity. Within its remit, it is authorised to:

- Issue recommendations and opinions,
- Develop methodological guidelines,
- Define principles for specific activities, and
- Request corrective actions when necessary.

The Board is supported by specialist committees, which assess quality within specific educational fields. Currently, three committees oversee the following areas:

- Technical and natural sciences,
- Economics, healthcare, humanities, and the arts.

The Board's rules of procedure allow specialist committees to establish ad hoc working groups, which act as advisory bodies.

The internal evaluation of research units, teams, and individual researchers is carried out through annual assessments of the implementation of the University's Strategic Plan and its key performance indicators. The findings are compiled in the Internal Quality Evaluation Report and its appendices.

Quality Assessment of Academic and Research Staff

The university-wide tool for evaluating academic and research staff (AVP) is the HAP-pi Information System ("Evaluation of Academic Staff – Primary Information"). This system is hierarchically structured, ensuring controlled access.

The specific criteria for evaluating academic staff are determined by individual faculties, which have internally regulated evaluation procedures. The standard process includes:

- Annual assessment meetings between each staff member and the head of their department,
- The submission of a written evaluation, including plans for the following year, signed by both parties and submitted to the Dean.

The evaluation of excellent research teams takes place through a public presentation of the team's achievements and future research plans. Based on these evaluations, decisions are made regarding the continuation or discontinuation of support for the teams.

Significant R&D&I achievements and activities are documented annually in:

- The University's and faculties' Annual Reports, and
- External evaluations conducted by funding providers for institutional support under LCDRO.

External Quality Evaluation

The external evaluation of educational, creative, and related activities at the University is carried out in accordance with Act No. 111/1998 Coll., on Higher Education Institutions and on Amendments to Certain Acts, by the **National Accreditation Bureau for Higher Education**. The Minister of Education, Youth and Sports of the Czech Republic appoints a **Board of Trustees** composed of external experts and representatives of cooperating institutions, with a term of office of six years^[7].

For R&D&I, scientific boards at both the university and faculty levels serve as advisory bodies. The **Scientific Board of UPCE** is an autonomous academic body that deliberates on significant scientific and academic matters and possesses voting rights. The Scientific Board is appointed by the Rector, who also serves as its Chair. The current composition of the UPCE Scientific Board includes 23 internal and 16 external members^[8].

The **International Scientific Council (ISC)** serves as an external advisory body to the Rector on matters of scientific, research, development, innovation, and other creative activities at UPCE, as well as in the evaluation of the University's performance in these areas. The five-member ISC is structured to reflect the key research disciplines developed within R&D&I at UPCE (see Section 4.1 for details^[9]).

A specialised external evaluation system exists for excellent research centres and teams. For example:

- The CEMNAT Research Centre undergoes annual evaluations conducted by the **International Scientific Advisory Board (ISAB)** of CEMNAT, which provides recommendations to the Dean of the Faculty of Chemical Technology (FChT)^[10].
- The Faculty of Transport Engineering (FTE) has established the **Council for Cooperation with Industry in Transport**, a joint advisory body of the Deans of FTE at UPCE and the Faculty of Transportation Sciences at CTU in Prague. Among other objectives, this council coordinates R&D&I activities between the faculties and their respective industry partners.
- The Faculty of Arts and Philosophy (FAP) and its excellent research teams participate in international projects such as CORE, where **International Scientific Boards (ISBs)** regularly assess the achievement of project objectives.

In the field of technology transfer, the **Commercialisation Council**^[11] serves as an independent expert advisory body to the Rector on research commercialisation (see Section 4.2 for details).

Research Ethics

The Code of Good Research Practice at UPCE is aligned with the *European Charter for Researchers* and takes into account the *UPCE Ethical Code*^[12].

In 2017, UPCE established the *University Ethics Committee*, followed by the creation of the *UPCE Ethics Board* in 2019. Additionally, through the successful implementation of the "HR Strategy for the Development of UPCE" project, the University obtained HR Award Certification (see Section 4.4 for details).

A key milestone in enhancing the ethical dimension of this certification was the launch of the **SAFE UPCE initiative** in 2024^[13]. This initiative consolidates all activities related to social safety, covering equal opportunities, well-being, ethical standards, and the prevention of unethical behaviour. As part of SAFE UPCE, training programmes have been introduced to prevent misconduct (for instance, sexual harassment) and raise awareness of social safety issues.

Students and employees facing difficulties can also seek confidential support from the **University of Pardubice Academic Advisory Centre (APUPA)**, which provides a safe environment and assistance in a wide range of psychological and personal issues.

A key role in preventing and addressing workplace misconduct is played by the University Ombudsperson, a position established within SAFE UPCE in 2024 (*Ombudsman Institute*)^[14]. In the same year, UPCE also introduced the *Whistleblower Protection Directive*, which provides a framework for reporting unethical conduct^[15].

For medical sciences, a specialised *Ethics Committee* operates at the Faculty of Health Studies (FHS), ensuring discipline-specific ethical oversight.

Since 2019, UPCE has utilised the **Turnitin anti-plagiarism system**, which is accessible to both students and academic staff. Additionally, internal regulations govern intellectual property protection, data protection (GDPR), conflict of interest policies, and related matters to ensure compliance with ethical and legal standards.

HTML links to additional documentation:

- [1] Rules of the Quality Assurance and Evaluation System of Educational, Creative and Other Related Activities: <https://www.upce.cz/en/rules-of-the-quality-assurance-and-evaluation-system-of-educational-creative-and-other-related>
- [2] UPCE Code of Good Research Practice: <https://www.upce.cz/en/code-of-good-research-practice>
- [3] University of Pardubice Implementation Schedule for the Strategic Plan 2021: <https://www.upce.cz/en/strategic-plan-2021>
- [4] Excellent Areas of Science and Research at UPCE 2024: [Science and Research at UPCE 2024 | University of Pardubice](#)
- [5] Records of Results of Creative Activities of Employees and Students of the University of Pardubice in the PBD Internal Information System: https://www.upce.cz/sites/default/files/8-recording_of_results_in_pbd_information_system_sm_3-2019_eng.pdf
- [6] Internal Evaluation Board of the University of Pardubice: <https://www.upce.cz/en/internal-evaluation-board-of-the-university-of-pardubice>
- [7] Board of Trustees: [Board of Directors | University of Pardubice](#)
- [8] Rules of Procedure of the Scientific Board of UPCE: [Standing Orders for the Scientific Board | University of Pardubice \(upce.cz\)](#)
- [9] International Scientific Council: <https://www.upce.cz/en/international-scientific-council>
- [10] Centre of Materials and Nanotechnologies – CEMNAT | [University of Pardubice](#)
- [11] Commercialisation Board: [Commercialisation Board of the University of Pardubice | University of Pardubice](#)
- [12] UPCE Code of Ethics: <https://www.upce.cz/en/ethical-code>
- [13] SAFE UPCE: <https://www.upce.cz/en/upce/safe-upce>
- [14] [UPCE Ombudsperson | University of Pardubice](#)
- [15] [Whistleblowing | University of Pardubice](#)

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.³
- 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:

At the end of 2024, the University of Pardubice adopted the *Sustainable Development Strategy of the University of Pardubice* for the period 2024–2030^[1]. This strategy defines the key framework for integrating sustainable development principles into all university processes. It is aligned with the **Sustainable Development Goals (SDGs)** of the **UN Agenda 2030** (2015), the **European Green Deal**, and at the national level, it is based on the **Strategic Framework Czech Republic 2030** and the recommendations of **UNILEAD**, a centralised development project of Czech public higher education institutions related to sustainable development.

The Sustainable Development Strategy of the University of Pardubice establishes the vision, mission, and objectives of sustainable development at UPCE across six key pillars:

- Governance of sustainable development at the University of Pardubice.
- Education at the University of Pardubice.
- Research, development, and creative activities that support sustainable development.
- The third role of the University, partnerships, and internationalisation.
- University management and operations, covering areas such as energy, carbon footprint, security, circular economy, transport, catering, water management, green spaces, digitalisation, and IT infrastructure.
- A socially safe environment.

³ If the knowledge transfer system is decentralised to the unit level, the HEI shall describe how the system works.

In 2025, the *Sustainable Development Action Plan of the University of Pardubice*^[2] will be introduced as a follow-up document, specifying measures, responsibilities, evaluation processes, timelines, financing methods, and transparency through stakeholder communication and reporting.

Examples of Current Strategies and Measures Supporting Sustainable Development at UPCE

- HR Strategy of the University of Pardubice and the HR Excellence in Research Award; HR Strategy Action Plan for Science and Research; Equal Opportunities Plan.
- Ethical Code and the UPCE Ethics Committee.
- Code of Good Research Practice of the University of Pardubice.
- Concept for Supporting Early-Career Researchers.
- SAFE UPCE Initiative.
- APUPA Advisory Centre.
- Career Centre.
- UPCE Ombudsperson and Whistleblowing Policy.
- ALMA Centre for students with specific needs or disabilities.
- Sustainable UPCE (dedicated web resources on sustainability).
- Collaboration with other Czech higher education institutions on sustainability – participation in the UNILEAD II CRP project and ongoing implementation of relevant recommendations.

Implementation of Measures Under the UPCE Sustainable Development Strategy

- Establishment of the University of Pardubice Centre for Sustainable Development – a university-wide, interdisciplinary association of academics from various faculties, providing expertise on sustainability at UPCE and for external partners (2024).
- Support for sustainable development initiatives by student organisations (2025).
- Use of renewable energy sources – installation of photovoltaic panels (PV) on the UPCE campus (2024).
- Development of sustainability monitoring and reporting systems (2025).
- Energy efficiency audit at UPCE (2025).
- Green space and biodiversity audit on the UPCE campus (2025).
- Carbon footprint assessment of the University of Pardubice (Scope 1 and Scope 2) (2024/2025).
- Implementation of more sustainable transportation and mobility solutions (2024).

Data Management

The management, recording, and storage of research data in electronic form is overseen by a dedicated university-wide unit, the **Centre for Information Technology and Services (CITS)**. Research data from ongoing projects are stored and regularly backed up at the level of individual research teams. Their broader use is regulated through a hierarchically structured system of access rights.

UPCE has implemented a *business intelligence* system, with a centralised data warehouse as a key component, integrating data from various internal and external systems. Of particular significance is the integration of data from the internal GAP and PBD systems (see Section 4.1) and connectivity with the Czech Government Office's information system, enabling access to national IS VaVal databases. This system supports analytical and statistical operations based on current needs, with the flexibility to use different tools. UPCE holds a licensed version of Power BI, available in Power BI Desktop and Power BI Service variants.

The **University Library** provides guidance on research data management, including data management planning (DMP) and the use of data repositories, through its website, personal consultations, and training sessions. A university-wide installation of the *Data Stewardship Wizard* is available at UPCE for the development of data management plans.

Institutional Repository and Open Access at UPCE

Since 2007, UPCE has operated its own institutional repository, the Digital Library of UPCE^[3], where since 2016, records and full texts of published research outputs (journal articles and conference proceedings) have been systematically deposited. Access to full texts is determined by the publisher's conditions.

Between 2020 and 2024, approximately 600 journal articles were published in open access in their final publisher's version, while approximately 1.500 articles were deposited in their accepted version. A university directive introduced in 2016 mandates that authors must submit the accepted version of their articles.

UPCE currently publishes five **open access journals**, with:

- One indexed in Web of Science,
- Two indexed in Scopus, and
- Three included in the Directory of Open Access Journals (DOAJ).

In 2023, the University Library launched a new **Open Science** section on its website. This resource provides detailed guidance for publishing researchers and project teams on open access policies, publication fees, predatory publishing practices, and the Open Journal Systems (OJS) publishing platform. It also covers green, gold, and diamond open access routes.

A dedicated research data section provides information on data management, DMPs, data repositories, and training sessions for data stewards. Additionally, it outlines funding agency requirements (for instance, OP JAK: Excellent Research, Czech grant agencies, the European Research Council, Horizon 2020, and Horizon Europe).

As part of UPCE's Open Science strategy, the University has benefited from transformative agreements negotiated by the **National Licensing Centre CzechELib**. These agreements allow institutional subscribers of electronic information resources to take advantage of publishing benefits in hybrid and gold open access journals of five major publishers.

UPCE-affiliated corresponding authors can use tokens (vouchers for free article publication). 2023 was the first year in which tokens were distributed, leading to the development of a methodology for their allocation, which proved effective. As a result, only minor adjustments were made for 2024.

The UPCE Open Science Strategy is implemented within the framework of the document *Open Science System at UPCE*^[4]. Other key documents supporting the development and implementation of the Open Science system at UPCE include the *Code of Good Research Practice of the University of Pardubice* and Directive No. 3/2019 on the *Recording of Creative Outputs by UPCE Employees and Students in the Internal PBD Information System* (see Section 4.3).

The Open Science System at UPCE is designed in accordance with national legislation, European Union documents, and international recommendations, including:

- UNESCO Recommendation on Open Science (Resolution of the 41st General Conference of the United Nations Educational, Scientific and Cultural Organization),
- Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information,

- European Commission Recommendation 2018/790 of 25 April 2018 on access to and preservation of scientific information,
- National Policy for Research, Development and Innovation of the Czech Republic 2021+,
- Strategic Plan of the Ministry of Education, Youth and Sports for Higher Education for the period from 2021 onwards.

Future plans include the adoption of an updated UPCE Open Science Strategy, the Data Policy of UPCE, the establishment of the Centre for Open Science, and the creation of a network of data stewards who will specialise in research data management while also maintaining expertise in the research practices of specific scientific disciplines.

Technology Transfer and Commercialisation

UPCE has a longstanding commitment to the transfer of knowledge and technology into practice and actively seeks collaboration opportunities with industry through its central university-wide office – the **Centre for Technology and Knowledge Transfer (CTKT)**^[5]. The key objectives in this area are fully aligned with the University's Strategic Plan. An expert advisory body to the Rector on the commercialisation of research outputs is the **Commercialisation Board**^[6].

Core Activities of the Centre for Technology and Knowledge Transfer (CTKT):

- A) Recording and supporting intellectual property protection (particularly patents, utility models, and know-how) – namely, R&D&I results generated at the University or in collaboration with external partners (liaison with patent attorneys and co-owners of research results).
- B) Presentation of R&D&I results in collaboration with the UPCE PR Office (marketing) and support for their commercialisation (negotiations with potential users of the results).
- C) Recording and subsequent annual monitoring of commercialisation contracts, including internal distribution of revenue from commercialisation.
- D) Support for proof-of-concept projects (focused on the applicability and implementation of specific R&D&I results in practice) and collaboration on their implementation.
- E) Consultations for inventors/originators/authors of research outputs and project leaders regarding intellectual property protection (patents and other forms of protection in the Czech Republic and abroad) and contractual arrangements.
- F) Development of the technology transfer system at UPCE (directives, methodological documents, information systems).
- G) Educational activities for UPCE employees and students on intellectual property protection and commercialisation.

The CTKT serves as the primary contact point at UPCE for industry partners. Its staff receive R&D&I-related inquiries and actively seek opportunities for collaboration between the University and companies or institutions interested in utilising research outcomes developed at UPCE. Additionally, CTKT establishes links with incubation and investment programmes that support the development of start-ups and emerging businesses.

In 2023, UPCE signed two key agreements with FONS JK Group, a.s., a company operating clinical laboratories:

- The Agreement on the Transfer of Proprietary Rights to Technologies
- The Agreement on the Transfer of Registered Name Shares

As a result, UPCE established its first spin-off company with university equity participation – Lipidica, a.s.. This spin-off company continues the knowledge transfer efforts of analytical chemists from

the Faculty of Chemical Technology (FChT), specifically in relation to a screening method for cancer detection, bringing this innovation into real-world application.

Services offered by CTKT to industry partners:

- A) Presentation of technologies available for licensing or sale, including assistance in evaluating their commercial potential.
- B) Identification of scientific partners at UPCE for contract research or collaborative research projects, as well as facilitation of negotiations on partnership models.
- C) Consultation on the necessary steps for establishing collaboration, including contract drafting and approval, intellectual property protection, and financial management.

Contract research and other industry-commissioned activities are carried out at the faculty level.

UPCE's Engagement in Strategic Regional Development Initiatives

In line with its third role – the transfer of R&D&I results to society and engagement with local stakeholders – UPCE actively participated in strategic integrated territorial investment (ITI) projects within the Hradec-Pardubice agglomeration. The University contributes to the ITI Steering Committee, several working groups, and the implementation of four major projects under Pillar 4: Higher Education Institutions and Industry Collaboration in R&D&I:

- NANOMAT
- NANOBIO
- IT4NEURO
- PosiTrans – University-Industry Collaboration

Since 1 April 2024, UPCE has been leading the "Intersectoral and Interdisciplinary Collaboration in the Research and Development of Communication, Information, and Detection Technologies for Control and Security Systems" project. This initiative focuses on supporting and establishing new collaborations with industry stakeholders.

Personal Data Protection and Intellectual Property Rights

As a public higher education institution, the University of Pardubice prioritises the protection of personal data, individual privacy, and intellectual property rights. The obligations arising from the General Data Protection Regulation (GDPR) are incorporated into internal regulations, including:

- A dedicated directive on personal data protection and processing principles.
- Other internal regulations, where data protection is always considered in the drafting or revision process.

All UPCE employees are contractually bound – through employment contracts or agreements on work performed outside an employment relationship – to adhere to data protection principles, processing rules, and confidentiality obligations. They receive regular mandatory training on GDPR compliance.

Data protection is also ensured in contractual relationships, with UPCE requiring contractual partners at a minimum to maintain confidentiality obligations whenever they may handle personal data under UPCE's responsibility. Data processing agreements are concluded with data processors and joint controllers in compliance with GDPR.

For each instance of personal data processing, UPCE ensures compliance with GDPR obligations, including:

- Establishing the legal basis for data processing.
- Fulfilling information obligations towards data subjects.
- Maintaining a personal data processing register.

Additionally, UPCE has implemented a system for handling data subject requests, as well as procedures for reporting and addressing personal data security breaches. More detailed information on personal data processing at UPCE is available at [Personal Data Protection and Processing | University of Pardubice](#)^[7].

Intellectual property rights at UPCE strictly adhere to legislative requirements^[8]. Beyond standard educational activities on this topic, awareness-raising and advisory services related to intellectual property protection are provided by the Centre for Technology and Knowledge Transfer (CTKT) (see Section 4.4).

HTML links to additional documentation:

[1] Sustainable Development Strategy of UPCE: <https://www.upce.cz/en/strategic-plan-2021>

[2] Action Plan of UPCE: https://www.upce.cz/sites/default/files/global/2023-11/8017/Action%20Plan_2023_2025_87450.pdf

[3] Digital Library of the UPCE: <https://dk.upce.cz/>

[4] Open Science at UPCE: <https://knihovna.upce.cz/en/uk/open-science/os-upce>

[5] CTTZ / Centre for Technology and Knowledge Transfer: <https://www.upce.cz/en/centre-for-technology-and-knowledge-transfer-0>

[6] Statutes of the Commercialisation Board of UPCE: <https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M4>

[7] Protection of Personal Data: <https://www.upce.cz/en/protection-of-personal-data>

[Opening Statement of the University of Pardubice about the Protection of Personal Data | Privacy Policy | University of Pardubice](#)

[8] Protection of Intellectual Property Rights: <https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M4>

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:

The qualification structure of academic staff at UPCE remained largely unchanged throughout the evaluation period, reflecting the mission and vision of individual organisational units as well as the financial resources allocated to them.

However, it is important to note that the total number of employees declined over this period. This optimisation was a response to rising inflation and the significantly slower growth of institutional funding. From the perspective of institutional sustainability, it is crucial that staff reductions were implemented across all employee categories, including technical and administrative personnel (TAP), thereby maintaining a stable TAP-to-academic staff ratio. A slight qualitative improvement was observed in the proportion of assistant professors relative to lecturers (referred to as "assistants" in MEYS terminology).

In previous years, the "postdoctoral researcher" position was not formally defined, which is why data for this category are unavailable for part of the evaluation period.

Age, Qualification, and Gender Structure Trends (2020–2024)

The trends in the age, qualification, and gender distribution of academic and research staff (ARS) at UPCE between 2020 and 2024 followed a similar pattern to those observed in the previous evaluation period (2015–2019).

- In the highest qualification categories (professors and associate professors), a natural generational replacement occurred, but the average age remained unchanged.
- A gradual reduction in the average age in these categories will improve career progression opportunities for ARS (see Sections 4.6, 4.7, and 4.13).
- The largest category remains assistant professors, evenly distributed between the 30–39 and 40–49 age groups.

Academic staff (AS), researchers (RS), and technical and administrative personnel (TAP) are all involved in R&D&I activities. However, for AS, their teaching workload must also be considered. The key factor is the balance between research and teaching duties among AS.

The highest proportion of AS engaged in R&D&I is at:

- Faculty of Chemical Technology (FChT) – 63%,
- Faculty of Arts and Philosophy (FAP) – 45%,
- Faculty of Transport Engineering (FTE) – 45%,
- Faculty of Electrical Engineering and Informatics (FEEI) – 34%,
- Faculty of Restoration (FR) – 29%,
- Faculty of Economics and Administration (FEA) – 24%,
- Faculty of Health Studies (FHS) – 14%.

This distribution aligns with the mission and vision of the faculties and reflects the scale of R&D&I activities at each faculty.

Gender Representation and Support for Women in R&D&I

A positive trend was observed in the increased participation of women in R&D&I, particularly in the younger research cohorts and the 50–59 age group.

- In younger age categories, as well as among early-career researchers, the proportion of women has increased.
- This demonstrates UPCE's commitment to fully utilising the potential of all employees, regardless of gender, thereby contributing to the University's long-term development (see Section 4.7).
- Improvements in the representation of female assistant professors and early-career researchers are expected to positively impact the future composition of female associate professors and full professors.

During recruitment for key positions (such as research excellence teams and project teams), UPCE places particular emphasis on supporting the employment of women returning from parental leave by offering:

- Flexible working conditions,
- Part-time contracts, tailored to individual needs.

Internationalisation of Academic Staff

The number of international staff at UPCE showed a significant upward trend in the previous evaluation period. In the current period, the number has stabilised at a higher level (with only a marginal increase of one additional international employee).

This stabilisation was a strategic goal of UPCE, made possible through:

- Funding for major projects, such as the *Centre for Ethics* and the *Centre for Materials and Nanotechnologies*.
- The introduction of postdoctoral positions funded from institutional sources.

Among administrative staff, there has not been an increase in the number of international employees. However, UPCE has introduced:

- Expanded English language courses for employees (ranging from beginner to advanced levels).
- Training on cultural diversity, communication in English, and interaction with international colleagues.

These initiatives enhance conditions for international researchers and foster a more internationalised research environment at UPCE.

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 [%] ⁴	Total 2024	Of which women [%]	Of which foreign [%]
Professor	57.14	18.25	4.39	50.11	18.80	3.73
Associate Professor	116.81	26.34	1.54	103.13	28.67	4.81
Assistant Professor	265.29	38.62	3.54	246.97	41.30	3.46
Assistant	97.60	50.71	7.28	80.10	55.58	5.00
R&D Personnel ⁵	---	---	---	---	---	---
Researchers in other categories ⁶	76.89	40.48	21.62	70.52	41.79	27.16
Technical and economic staff ⁷	392.05	71.84	0.98	347.44	74.18	0.70
Early career researcher ⁸	124.51	36.27	19.23	95.99	39.38	16.64
Scientific, research and development staff involved in teaching activities	8.81	19.90	88.14	0.34	25.00	75.00
Total number of foreign nationals	35	17	---	36	19	---

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 Researchers with Slovak citizenship are not considered foreign.

⁵ 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).

⁶ 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).

⁷ Who participates in the management and support of R&D&I in the institution.

⁸ See Definition of Terms in Methodology HEI2025+.

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	---	---	---	---	13.4	---	25.4	29.4	28.4	15.8	32.8	18.2
Associate Professor	---	---	5.8	---	46	23.8	19.7	51.9	16.8	30.4	11.7	---
Assistant Professor	1.4	---	26.7	31.2	50.7	39	13.5	59	7.3	28.6	0.3	---
Assistant	14	61.1	37.2	52.1	27.1	65.7	12.4	50	5.4	42.9	3.9	20
Early career researcher ⁹	17.7	53.8	82.3	38.8	---	---	---	---	---	---	---	---
R&D Personnel ¹⁰	---	---	---	---	---	---	---	---	---	---	---	---
Researchers in other categories ¹¹	17.2	60	50.6	45.5	20.7	22.2	3.4	100	5.7	40	2.3	---
Technical and economic staff ¹²	5.2	65	18.6	76.4	33	78.9	28.1	76.1	14.9	60.3	1	25
Scientific, research and development staff involved in teaching activities	---	---	25	---	75	16.7	---	---	---	---	---	---

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.

⁹ See Definition of Terms in Methodology HEI2025+.

¹⁰ 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).

¹¹ 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).

¹² Who participates in the management and support of R&D&I in the institution.

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	---	---	---	---	18.2	8.3	28.8	36.8	22.7	13.3	30.3	15
Associate Professor	---	---	3.8	---	44.6	24.1	31.5	31.7	11.5	53.3	8.5	9.1
Assistant Professor	0.7	50	21.8	32.8	52.4	41.6	16	48.9	7.8	56.5	1.4	---
Assistant	6.4	57.1	35.8	56.4	33	61.1	16.5	55.6	3.7	25	4.6	40
Early career researcher ¹³	13.3	40	86.7	40.8	---	---	---	---	---	---	---	---
R&D personnel ¹⁴	---	---	---	---	---	---	---	---	---	---	---	---
Researchers in other categories ¹⁵	10.1	33.3	47.2	45.2	30.3	40.7	5.6	80	4.5	50	2.2	---
Technical and economic staff ¹⁶	4.7	77.8	12.9	83.7	33.9	74.4	32	80.3	14.7	64.3	2.4	33.3
Scientific, research and development staff involved in teaching activities	---	---	---	---	---	---	---	---	---	---	---	---

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 See definitions in Methodology HEI2025+.

¹⁴ 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).

¹⁵ 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).

¹⁶ 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:

On 18 December 2021, the University of Pardubice adopted the European standards for human resources development as outlined in the **European Charter for Researchers** (the Charter) and the Code of Conduct for the Recruitment of Researchers (the Code). Following an assessment by the European Commission on 6 October 2021, UPCE successfully met the requirements for the **HR Excellence in Research Award** (HR Award).

In 2023, UPCE successfully renewed its HR Award certification for another period. This certification recognises and safeguards excellence in human resource management within the research environment, ensuring openness and transparency in recruitment procedures and a high-quality working environment at UPCE.

The *HR Office* oversees the *HR Strategy for Research* in line with the principles of the Charter and the Code. The Action Plan is publicly available, and its measures are being gradually implemented^[1].

Support Tools for Career Development

As part of the Action Plan implementation, UPCE is developing career support tools for academic and research staff, such as the mentoring programme and the University Doctoral School.

The **Doctoral School**^[2] provides centralised training for doctoral students through thematic teaching blocks, introducing best practices in research ethics, academic writing, citation standards, and scientific text production. The goal of the University Doctoral School is to enhance the skills of early-career researchers in various fields of research and development.

For the past four years, UPCE has been running a **mentoring programme**^[3] for:

- Domestic and international doctoral students,
- Postdoctoral researchers,
- Early-career academic and research staff.

The programme offers three types of mentoring activities:

1. Individual Mentoring

- One-on-one consultations with an experienced mentor to transfer knowledge and expertise in any area that can help shape and develop the mentee's professional career.
- Topics may include career goal setting, research and teaching experience sharing, handling administrative or professional challenges, securing study or work placements abroad, networking opportunities, and work-life balance strategies.

2. Peer Mentoring

- A less formal mentoring model based on knowledge exchange among peers, where more experienced individuals support their less experienced colleagues.
- Examples include senior doctoral students guiding new PhD candidates at the beginning of their studies, or experienced colleagues introducing new staff members to research teams or departments.

3. Structured Training

- A series of seminars, lectures, and workshops focused on pedagogical development, research skills, soft skills, and well-being.

Recruitment and Selection Process at UPCE

UPCE publishes job vacancies on its official notice board and website. If the nature and type of the vacancy require it, nationwide job portals such as jobs.cz are also used. For academic and research positions, where relevant, vacancies are also advertised in English and on international platforms.

The recruitment of academic and research staff (ARS) for scientific and project teams is primarily managed by principal investigators responsible for the implementation of specific research tasks. These investigators utilise contacts at international R&D&I institutions and networks for international collaboration.

International Recruitment

Targeted recruitment of international staff is primarily conducted by major research centres, such as CEMNAT and the Centre for Ethics, as well as by principal investigators of international projects (such as ERC, FP7). To support this recruitment, UPCE utilises the EURAXESS portal alongside specialised academic job boards tailored to specific disciplines. For instance, the Centre for Ethics publishes all job advertisements on *PhilosL*, the leading international platform in its field.

Selection Procedure

The recruitment process at UPCE complies with:

- The Rules of the Selection Procedure of the University of Pardubice^[4].
- Section 77(3) of Act No. 111/1998 Coll., on Higher Education Institutions and on Amendments to Certain Acts (the Higher Education Act), as amended.

Faculty deans, departments, institutes, and centres of excellence set specific field-related selection criteria for ARS recruitment. Leadership positions (such as heads of departments and institutes) are filled through public selection procedures on a fixed-term basis.

When evaluating candidates, the selection committee considers:

- Professional qualifications and expertise.
- Previous research achievements and experience.
- Skills and potential for professional development.
- Personality traits, where relevant.

The primary selection criterion is always the suitability of the candidate for the position, irrespective of gender, age, ethnicity, or any other potentially discriminatory factor. The selection committee ranks candidates and submits its recommendation to the dean, who approves and appoints the successful applicant. In departments and institutes with formally established research or project teams, the heads of these teams are usually appointed by the head of the department/institute in consultation with the dean.

For clarity and efficiency, the selection process is simplified to the maximum extent. The recruitment procedure is published on the university website, making it accessible to both external applicants and UPCE employees. Candidates are informed of any changes to the selection process that may affect them. All participants in the selection procedure receive formal notification of the outcome.

Career Development and Professional Growth

The University of Pardubice actively supports career development and the professional growth of its employees, with a particular focus on enabling academic and research staff (ARS) to achieve the titles of Associate Professor (*docent*) and Professor (*profesor*).

The requirements for academic and research activities necessary for these qualifications are detailed in the University's key documents, including:

- The Rules for Associate Professorship and Professorship Qualification Procedures^[5]
- The Internal Salary Regulations^[6]
- The Employment Code^[7]
- The Rules of the Selection Procedure (see above)
- The System for Stimulating Research Activities of Students and Early-Career Researchers^[8]

Training and Career Progression

The needs for pedagogical and professional training among academic and research staff are continuously assessed. These needs have been directly incorporated into the Development of Education Quality, Evaluation, and Strategic Management at the University of Pardubice project, which is currently being implemented. Since 2018, UPCE has progressively introduced mandatory staff training via e-learning tools, which have become standard practice between 2020 and 2024. As employment relationships and professional activities are managed at the faculty level, the career progression system for ARS is further detailed in faculty-specific internal regulations and procedures.

Sabbatical Leave

One of the key incentives for enhancing qualifications, research output, and other scholarly activities at UPCE is the sabbatical leave system, which is administered by individual faculties and supervisors in accordance with the Higher Education Act, the Statutes of UPCE, and the Employment Code. At UPCE, this career development tool is implemented under faculty-specific conditions. A typical

prerequisite for granting sabbatical leave is a commitment to a defined research outcome, such as a published book, habilitation, or an international research stay (for instance, a Fulbright Fellowship). Given the specialised nature of sabbaticals, UPCE grants a maximum of one to two sabbatical leaves per semester or academic year.

Return Programme ("Návraty")

UPCE is developing the Return Programme ("Návraty"), a set of measures aimed at mitigating career disruptions caused by maternity or parental leave, long-term illness, or extended caregiving responsibilities for children or other dependants. The pilot phase of the programme (2025–2028) will also introduce measures to support the seamless reintegration of staff returning from extended international research stays. In 2025, UPCE plans to submit a project proposal for the Return Programme, which will encompass the implementation of these measures and provide annual support for a selected number of returning staff members.

HTML links to additional documentation:

[1] Human Resources Strategy for Researchers: [Human Resources Strategy for Researchers \(HRS4R\) | University of Pardubice](#)

Open, Transparent, Merit-based Recruitment at UPCE: [OTM-R Policy at the University of Pardubice | University of Pardubice](#)

Action Plan (2020-2025): [Action Plan | University of Pardubice](#)

[2] University Doctoral School: <https://www.upce.cz/en/upce/doctoral-school>

[3] Mentoring: <https://www.upce.cz/en/mentoring>

[4] Rules of Selection Procedure: <https://www.upce.cz/en/rules-of-selection-procedure>

[5] Rules for Associate Professorship and Professorship Qualification Procedures: [Rules for Habilitation Procedure and Procedure for the Appointment of Professors | University of Pardubice](#)

[6] Internal Salary Regulations: <https://www.upce.cz/en/internal-wage-regulations>

[7] Employment Code of the University of Pardubice: <https://www.upce.cz/sites/default/files/18-2007-prac-rad.pdf>

[8] System for Stimulating Research Activities of Students and Early-Career Researchers: <https://zamestnanci.upce.cz/en/system/files/zamestnanci/jege3420/stimulation-system.pdf>

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:

The University of Pardubice systematically and continuously supports and remains committed to gender equality in higher education, research, development, management, and human resources development. In 2022, UPCE developed the *University of Pardubice Equal Opportunities Plan for 2022–2025*^[1], which identifies gender equality in recruitment and career progression as one of its five strategic priorities (Priority No. 3).

This plan aligns with UPCE's broader strategic framework, particularly the *Action Plan for the Human Resources Strategy for Researchers (HRS4R)* (see 4.6), which reflects the principles of the *European Charter for Researchers* and the *Code of Conduct for the Recruitment of Researchers*. As an institution that was awarded the HR Excellence in Research Award (HR Award) in October 2021, UPCE is committed to implementing institutional standards for human resources development (see above).

UPCE formally upholds equal opportunities, gender equality, and the rejection of all forms of discrimination in its core institutional documents, including:

- The Strategic Plan of the University of Pardubice (2021+)
- The University of Pardubice Code of Ethics
- The University of Pardubice Code of Good Research Practice (see 4.3)

The principle of gender equality is embedded in all key processes, including remuneration and performance evaluation. When appointing staff or nominating members to expert bodies, UPCE considers only the professional, pedagogical, and academic qualifications of individuals, irrespective of gender. Equal conditions in recruitment and selection procedures are secured through UPCE's Open, Transparent, and Merit-Based Recruitment (OTM-R) policy (see 4.6).

Similarly, remuneration and performance evaluation adhere to the principle of equality, as outlined in the Equal Opportunities Plan 2022–2025 (Priority No. 3, Point 4), which emphasises eliminating potential pay disparities as well as the need for systematic monitoring of salary levels across genders.

Gender Representation in Governance and Leadership

A key priority of the *University of Pardubice Gender Equality Plan 2022–2025* is to strengthen gender-balanced representation in governance and decision-making processes. When appointing senior staff, making nominations, forming expert committees, and evaluating employees, UPCE follows a strict policy of gender equality and non-discrimination.

Statistical overview (2020–2024):

- The proportion of women among ARS and in leadership positions has remained stable.
- Gender balance has been maintained in university leadership, with two female vice-rectors.
- Female representation is gradually increasing in faculty leadership, particularly in vice-dean positions (though not yet at the dean level), as well as in academic senates and regular academic positions, including heads of departments and deputy heads.
- Women predominate in senior administrative roles, such as faculty secretaries and heads of central university offices.

Work-Life Balance and Family-Friendly Policies

The University of Pardubice has long been committed to improving work-life balance conditions for its employees. In 2024, the *Concept for Supporting Parents on Maternity and Parental Leave at the University of Pardubice* was revised and implemented to enhance the working conditions of parents with children under the age of 15.

The main goals of this concept include:

- Strengthening opportunities for flexible work arrangements
- Expanding flexible working hours
- Improving the campus environment to be baby-friendly

Between 2023 and 2024, the University installed baby-changing stations across most university buildings. In 2024, a children's play area was established in one of the largest buildings on campus. The University also regularly organises events for children.

UPCE enables flexible working hours and part-time contracts, depending on the specific workplace and agreement with the supervisor. The University also takes an individual approach to cases of long-term illness, family caregiving responsibilities, and other social circumstances requiring flexibility.

The University does not impose a mandatory retirement age. Academic and research staff may continue working beyond retirement age as long as they remain physically and professionally capable of fulfilling their academic and research duties.

Well-being, Prevention, and Workplace Safety

UPCE has long operated the **Academic Counselling Centre (APUPA)**^[2], and in 2024, it launched the SAFE UPCE initiative, establishing the position of an ombudsperson to prevent and address workplace misconduct (see 4.3 for details). The University has codified principles for preventing and addressing inappropriate behaviour in various institutional and faculty-level regulations.

Measures explicitly targeting sexual harassment, mobbing, bossing, and bullying have been gradually introduced, including the university-wide directive *Prevention of Sexual and Gender-Based Misconduct* and dedicated web pages providing guidance and resources on how to report and address workplace misconduct^[3].

HTML links to additional documentation:

- [1] [Gender Equality Plan | University of Pardubice](#)
- [2] [Counselling Centres | University of Pardubice](#)
- [3] [Inappropriate Behaviour | University of Pardubice](#)

4.7.1 Gender balance in management positions

Senior staff	2020		2024	
	Men	Women	Men	Women
Rector	1		1	
Vice-Chancellor	2	2	2	2
Dean ¹⁷	7		7	
Academic Senate	31	11	37	10
Scientific/Artistic/Academic Council	32	6	34	6
Quaestor	1		1	
Board of Directors	11	2	10	2

Note: If one person holds more than one of these positions within the HEI, he/she will be counted in each.

¹⁷ 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.¹⁸

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:

UPCE supports mobility in line with its strategic objectives, with a strong emphasis on its potential secondary effects, such as involvement in international projects, strengthening strategic cooperation, achieving excellence in publications, co-authorship, and organising international conferences.

For doctoral students, long-term international mobility is a compulsory part of their study plan. Most of these mobilities are funded through bilateral agreements within the **ERASMUS+ programme**, with fewer cases falling under **CEEPUS, AKTION, DAAD, Fulbright, and similar schemes**. UPCE has also successfully utilised new formats of short-term doctoral mobility and combined intensive Erasmus programmes, such as the **Blended Intensive Programme**. Doctoral students who write their dissertations in English or under dual supervision (cotutelle) receive additional financial support. During the assessment period, agreements were established with 320 foreign institutions in 46 countries. These included 21 general memoranda of cooperation and 493 inter-institutional agreements under the Erasmus+ programme.

UPCE employees undertake between 400 and 500 international trips each year, each lasting more than four days. Long-term mobility of academic and research staff is constrained by teaching commitments and funding availability. Some mobility opportunities are funded in line with research priorities through individual research projects (**GAČR, TAČR, international R&D&I projects, ERC Starting Grant, ERC CZ**). Significant support for international mobility has also been provided through OP VpK and OP VVV projects (**ROUTER, POSTDOC, MEMO II**).

Hundreds of international researchers visit UPCE each year, with many staying for extended periods. Besides the most common Erasmus+ mobilities, UPCE has been particularly successful in attracting international researchers to its established centres of excellence, where well-developed infrastructure (specialised libraries, state-of-the-art laboratories, etc.) fosters an international research community. Scholars come for research stays, including self-funded visits or those supported by prestigious grants such as the **Marie Skłodowska-Curie Fellowship**. For instance, the *Centre for Ethics* has hosted dozens of international doctoral students, postdoctoral researchers, and senior scholars during the assessment period, for both long-term and short-term stays. These visits

¹⁸ Long-term mobility means an uninterrupted period of more than three months.

are always linked to public engagement activities, such as participation in research seminars, conferences, or even semester-long course delivery.

In addition to the support mechanisms mentioned above, UPCE operates a dedicated International Support Service and is an active participant in the EURAXESS network^[1].

Examples of Research Stays and International Visits

Outgoing Mobility

Prof. Ing. Jiří Málek, DrSc. (FChT) – Repeated research stays at the National Institute for Materials Science (NIMS) in Tsukuba, Japan, were linked to the organisation of a joint doctoral school in materials science. During the assessment period, eight UPCE doctoral students undertook one-year research internships at NIMS as part of a bilateral agreement. In addition, in 2023, Prof. Málek visited NIMS together with the Dean of FChT, Prof. Němec. Prof. Málek personally coordinates these stays, facilitates communication with mentors at NIMS and supervisors at UPCE, and organises a seminar for UPCE partners and student supervisors at NIMS, ensuring that each student pair has the opportunity to present their research findings. He also ensures that the students' research contributions are reflected in joint publications, several of which are published annually.

A successful example of securing **external scholarships for research stays abroad** is the case of **Mgr. Kamila Pacovská, Ph.D.** from FAP. In 2024, she undertook a five-month research stay (July–November 2024) at Central European University (CEU) in Vienna with the support of a habilitation scholarship from the AKTION programme. While writing her habilitation thesis, *Pride and Humility*, she established a particularly close collaboration with philosopher **Cathy Mason**, who shares her research interests in the philosophy of pride, humility, and love. Kamila Pacovská gained valuable experience in international teaching, research, grant administration, academic governance, and diversity and environmental policies, which she plans to apply at her home institution.

Similarly, **Prof. Miroslav Šedivý** received a six-month Fulbright Fellowship (March–August 2022) to conduct research for his project *International Partner or Geopolitical Threat? European Perspectives of the US in the Nineteenth Century*. As part of this research, he worked at the University of Delaware, Department of History, where he examined the comparative history of diplomatic relations between Germany, the Habsburg Monarchy, and the United States in the 19th century.

Incoming Mobility

A six-month research stay (01/03/2021 – 31/08/2021) by **Ing. Özgür Yurdakul, Ph.D. (FTE)** at the University of Naples Federico II, Italy (research group of Prof. Di Ludovico) led to a collaboration between UPCE and the Italian university, resulting in a "reciprocal" visit by PhD student **Ing. Carmine Moliterno** to the Department of Transport Structures at UPCE (01/05/2023 – 31/07/2023). The findings from both research stays were published as joint publications in prestigious journal journals and presented at conferences. The research focused on experimental and numerical analysis of structural damage, including earthquake-induced damage, and the collaboration is ongoing.

Dr. Oshin Behl, MD, MBA (Department of Otorhinolaryngology, Smell and Taste Clinic, TU Dresden, Germany) arrived at FHS as part of the *International Mobility of Employees at the University of Pardubice II* project for a six-month stay (11/2021 – 04/2022) in the 2021/2022 academic year. At FHS, she participated in the TAČR GAMA (TASENS) research project, contributed to one conference

paper and one scientific article, and was actively involved in teaching students during the summer semester of 2021/2022. Her engagement in the faculty's day-to-day activities brought new perspectives and approaches to teaching and research, which inspired both colleagues and students. The successful realisation of this project is seen as a key element in fulfilling UPCE's mission and vision for enhanced international collaboration and the internationalisation of the faculty's research environment.

A notable example of **long-term incoming mobility** is the participation of researchers through the **Marie Skłodowska-Curie Individual Fellowship** programme. During the assessment period, two researchers joined the Centre for Ethics through this scheme.

Silvia Caprioglio Panizza, Ph.D. (Research Fellow, School of Philosophy, University College Dublin) arrived (2022–2023) with the project *Moral Impossibility: Rethinking Choice and Conflict*. In her research, she developed a new theoretical framework for moral impossibilities and proposed a method for analysing intractable moral conflicts. Following the completion of her project, she successfully integrated into the Centre for Ethics at FAP UPCE, further strengthening the internationalisation of the faculty's research and teaching environment^[2].

Doc. Olli Lagerspetz, Ph.D. (Åbo Akademi University) arrived (2022) with the project *Philosophy as Cultural Self-Knowledge: R. G. Collingwood, Peter Winch, and the Human Sciences*. Lagerspetz examined the role of the humanities and social sciences in supporting a viable civil society. After completing his project, he continued his collaboration with the Centre for Ethics, facilitating PhD student mobility and helping create opportunities for FAP UPCE to engage in international consortium projects^[3].

HTML links to additional documentation:

[1] [International Support Services | University of Pardubice](#)

[2] <https://centreforethics.upce.cz/en/moral-impossibility>

[3] <https://centreforethics.upce.cz/en/philosophy-cultural-self-knowledge>

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)¹⁹. 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).

Self-assessment:

The University boasts state-of-the-art facilities and an extensive array of cutting-edge equipment, into which it has invested substantial financial resources – primarily from European funding sources such as the ESF, the 7th Framework Programme, institutional support for LCDRO, and other institutional funds. Between 2020 and 2024, significant updates and modernisation of research infrastructure were undertaken, with a strong emphasis on the shared use of research equipment across teams and the acquisition of several unique instruments to enhance the University of Pardubice's international standing. During this period, UPCE invested a total of EUR 101,899 in modernising its research infrastructure, contributing to the successful acquisition of major Horizon Europe and ERC/ERC-CZ projects. The majority of the newly acquired equipment is utilised for both R&D&I activities and educational purposes.

System for the Acquisition, Optimisation, and Renewal of Costly Research Equipment

Given that faculty needs regarding costly research equipment differ depending on the faculty's focus (as UPCE is engaged in five out of six research domains), the system for the acquisition, optimisation, and renewal of costly research instruments is dependent on the funding source.

1. Acquisition of costly research equipment from institutional support for LCDRO

When acquiring specific costly research instruments using institutional support for LCDRO, the University's Executive Board determines how financial resources are allocated among faculties, which then decide on the necessary funding for the acquisition and renewal of specific costly instruments.

Funding for the acquisition of investment and non-investment assets to support R&D&I from institutional resources is determined at the university level based on the *Financial Management Rules*^[1]. This system takes into account the quality and excellence of each faculty's R&D&I outputs in the previous evaluation period.

¹⁹ 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.

2. Distribution of financial resources from project and grant funding (European funds – ESF)

The allocation of financial resources from European Structural Funds (ESF) follows the specific call conditions set by the funding provider. However, factors such as faculty size, the quality of R&D&I outputs, the strategy of UPCE and its faculties, and particularly the anticipated impact of financial support on R&D&I development within a given organisational unit are always considered.

One example is the **National Recovery Plan** for the higher education sector, which enabled the acquisition of unique research equipment for progressive study programmes, the enhancement and modernisation of the University's network infrastructure, the installation of audiovisual equipment in lecture halls, and investment in professional tools for producing educational videos and tutorials.

Furthermore, the **Doctoral Study Programme Infrastructure at the University of Pardubice (DSP INFRA)** project, funded through the **Jan Amos Komenský Operational Programme (OP JAK)**, has been launched to further support infrastructure development for doctoral study programmes. This infrastructure is expected to be completed in **2025**.

Procurement and Utilisation of Research Infrastructure Across Faculties

Each faculty that procures expensive instruments has its own approach to their acquisition. The **Faculty of Transport Engineering (FTE)** primarily relies on regularly announced grant calls (currently, for example, the OP JAK programme) for acquiring the necessary equipment. The faculty budget also includes an Investment Property Development Fund (FRIM) and a reserve fund to enable maintenance and reasonable renewal of this equipment.

Similarly to FTE, the **Faculty of Electrical Engineering and Informatics (FEEI)** does not use LCDRO funds for purchasing investment laboratory equipment. Such equipment is predominantly acquired through research and development projects. The use of individual instruments is determined by the specific conditions of the grant call under which the equipment was procured.

At the **Faculty of Chemical Technology (FChT)**, the allocation of funds for laboratory equipment is regulated by Directive No. 3/2024^[2]. The Faculty Executive Board determines the total amount of investment funds, which are then distributed among individual departments based on their research performance (as calculated according to Article 8 of Directive 3/2024). Heads of departments and institutes decide on their respective proposals and prioritisation. These investments are managed by a designated responsible officer who oversees procurement, operation, and, where applicable, makes the equipment available for service activities within the faculty. From 2025 onwards, a portion of the budget will be set aside for a major faculty-wide investment, agreed upon collectively by all department and institute heads (for 2025, the planned purchase is a transmission electron microscope). This instrument is intended to function as a service facility for the entire faculty.

An example of a high-cost instrument acquired at FEEI is the *R&S SMW200A Signal Generator*. This generator, used for various research and project-related activities, enables the creation of high-frequency signals for testing radar systems. Its primary function is the generation of pulse signal waveforms and sequences with intra-pulse modulation, utilised in modern multifunctional radar systems. These generated signals serve as training sequences in research on advanced signal processing methods and adaptive radar signal generation, aimed at mitigating the effects of clutter and interference. Additionally, the generator is employed for measuring the radar cross-sections of selected targets and evaluating the shielding properties of newly designed attenuation materials.

Another example is the laboratory facilities^[3] of the *Training and Research Centre in Transport (TRCT)*^[4], which operates as part of the Faculty of Transport Engineering. This research centre houses state-of-the-art laboratories and classrooms equipped with specialised technology. TRCT provides laboratory facilities for teaching at the Faculty of Transport Engineering and serves as a hub

for experimental activities in research projects and commercial research. Close collaboration with organisations, research institutes, and industrial partners in the transport sector enables the integration of theoretical knowledge with practical needs and industry experience, offering a comprehensive approach to solving transportation-related challenges.

For instance, in 2022, the TRCT laboratory was used to calibrate a strain gauge measuring bolt, which was later employed in contract research for measuring vehicle resistance forces for the Railway Administration of the Czech Republic. In addition, research activities conducted at FTE resulted in high-impact outputs, including a Q1 journal publication.

Organisation and Sharing of Research Infrastructure

Service centres tailored to specific disciplines have been established at individual faculties. The key players in this regard are the technical faculties (FChT, FTE, and FEEl), which allocate the majority of financial resources to acquiring research equipment. Given their differing research focuses, each faculty has developed its own system for the use and sharing of technology. The sharing of equipment is subject to the conditions attached to the financial resources from which the equipment was acquired. Where permitted by legislation, faculties provide their highly specialised or unique equipment and related services to industry partners through subcontracting, contract research, or supplementary activities.

A specific example of inter-faculty cooperation is the *Long-Term Cooperation Plan between the Faculty of Electrical Engineering and Informatics (FEEl) and the Faculty of Transport Engineering (FTE), aimed at collaboration with industry partners*. This plan was formalised through Directive No. 2/2021, making it a binding document.

One case of shared infrastructure between faculties is the **TESCAN Vega Scanning Electron Microscope**, operated jointly by Associate Professor Švanda (FTE) and Associate Professor Bouška (FChT). The microscope is used on a needs-based, mutually agreed schedule, with an approximate usage ratio of 70% FTE / 30% FChT. The costs of repairs and maintenance are negotiated *ad hoc* as part of the shared use.

At FChT, several high-value instruments have been acquired and are currently operated as dedicated service facilities. These devices are managed by trained academic and research staff and are utilised for sample analysis by both internal and external users. The operational guidelines for these facilities are available on the university intranet – for instance, the operating regulations of the *Powder X-ray Diffraction Laboratory*.

Notable examples of these instruments include the D8 ADVANCE X-ray Diffractometer (Bruker), the ICP-MS Agilent 7900 Spectrometer (Agilent Technologies), the contraAA 600 Spectrometer (Analytik Jena), and the MALDI LTQ Orbitrap XL Mass Spectrometer (Thermo Fisher Scientific). Additionally, the **CEMNAT research infrastructure** hosts a total of 24 shared instruments, with 155–312 research requests per year during 2020–2024. The breakdown of requests is approximately 76% from UPCE, 17% from other Czech universities and research institutions, and 7% from international users.

CEMNAT is a true **OPEN-ACCESS infrastructure**, listed on the *Roadmap of Large Research Infrastructures for 2023–2026*^[5]. Leveraging its intellectual and instrumental resources, CEMNAT provides synergistic opportunities for external users from research organisations and businesses, as well as for in-house researchers and students.

Furthermore, UPCE operates two other major research centres:

- **Centre for Ethics as Study in Human Value (FAP)**^[6]
- **Training and Research Centre in Transport (FTE)**

Ongoing Major Project Supporting Collaboration with the Application Sector (FEEI)

A key current project fostering collaboration with industry is the *Intersectoral and Interdisciplinary Cooperation in Research and Development of Communication, Information, and Detection Technologies for Control and Security Systems (CIDET)*. The project's primary objective is oriented research in the fields of electronic sensors, radio components, radar systems, and shielding materials for communication, detection, and information technologies aimed at ensuring the safety of large-scale infrastructures.

The project's core benefit lies in strengthening and sustaining long-term cooperation between research organisations and the application sector. This collaboration enables high-quality, timely advancements in the field while facilitating the rapid implementation of new findings in specific electronic systems and their components. The applicability of results is based on knowledge-sharing, access to cutting-edge equipment, and the use of advanced signal processing methods and artificial intelligence, leading to the development of progressive methods for object detection, identification, classification, and tracking.

The CIDET project builds upon its predecessor, the *University of Pardubice and Industry Collaboration in Applied Research on Locating, Detection, and Simulation Systems for Transport and Logistics (PosiTrans)*, which ran from 2018 to 2022. Both projects aim to strengthen and expand collaboration between research organisations and the industry sector in the Hradec-Pardubice metropolitan area, specifically in the fields of electrical engineering, information technology, transport, and logistics.

HTML links to additional documentation:

- [1] Financial Management Rules: [Rules of Management | University of Pardubice](#)
- [2] FChT Directive No. 3/2024: <https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M4>
- [3] <https://dfjp.upce.cz/en/jptf/erct/sekce.html>
- [4] Training and Research Centre in Transport: [Educational and Research Centre in Transport | University of Pardubice](#)
- [5] [Centre of Materials and Nanotechnologies – CEMNAT | University of Pardubice](#)
- [Large research infrastructures adopted by the Czech Government for public funding in 2023–2026 – Research Infrastructures](#)
- [6] [Centre for ethics](#)

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 ²⁰
Costs/expenses related to the acquisition of small fixed assets for R&D&I	12.021 / 474.201	9.438 / 372.308	7.880 / 310.848	5.970 / 235.503	8.118 / 320.237	43.427 / 1.713.097
Cost of repairs and maintenance of equipment	5.477 / 216.055	2.841 / 112.071	6.560 / 258.777	4.670 / 184.221	5.872 / 231.637	25.420 / 1.002.761
Acquisition of tangible (DH) and intangible (DN) assets for R&D&I (investments)						
Of which software	1.318 / 51.992	2.095 / 82.643	0	0	0	3.413 / 134.635
Of which other intangible fixed assets	0	0	0	0	0	0
Of which land, buildings and structures	0	0	0	0	0	0
Other intangible fixed assets (machinery, apparatus, equipment, etc.	13.542 / 534.201	12.803 / 505.049	0	3.233 / 127.535	61 / 2.406	29.639 / 1.169.191
Total infrastructure spending in years ²¹	32.358 / 1.276.450	27.177 / 1.072.071	14.440 / 569.625	13.873 / 547.258	14.051 / 554.280	101.899 / 4.019.684

²⁰ Enter the sum of the row.

²¹ 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 (ERC²², MSCA²³, HHMI²⁴, HFSP²⁵, NSF²⁶, Horizon Europe²⁷, NIH²⁸, Wellcome Trust²⁹, EDF³⁰, OP JAK³¹, OP TAK³², NPO³³, GA ČR³⁴, TA ČR³⁵ 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 4.10.5.³⁶

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.

Self-assessment:

The total budget of the University of Pardubice (see 4.10.1) can be divided into **non-investment expenditure** (CZK 1,274,819,000 in 2024) and **investment expenditure** (CZK 193,761,000 in 2024). Non-investment expenditure consists of subsidies/grants provided by the Ministry of Education, Youth and Sports, which include funding primarily for educational activities (approximately 48%),

²² 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.

²³ 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.

²⁴ Howard Hughes Medical Institute - a non-profit organization in the USA significantly supporting international biomedical research.

²⁵ Human Frontier Science Program - an international programme to support research, particularly in the natural sciences and computer science.

²⁶ National Science Foundation (USA).

²⁷ Horizon Europe - the EU's 9th Framework Programme for research and innovation, running from 2021-2027.

²⁸ 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.

²⁹ major UK private foundation supporting mainly biomedical research.

³⁰ European Defence Fund.

³¹ 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.

³² 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.

³³ 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.

³⁴ Grant Agency of the Czech Republic.

³⁵ Technology Agency of the Czech Republic.

³⁶ 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.

funding related to R&D (approximately 44%), and other financial resources from development projects and other income sources (approximately 8%).

Non-investment financial resources for R&D are allocated as follows: institutional support for long-term conceptual development of research organisations (LCDRO) (45%), projects funded by national providers (approximately 17.5%), projects funded by international providers (8.2%), support for large research infrastructures (5.1%), specific research primarily related to the scientific, research, and creative activities of doctoral students (3.8%), contractual research (3.5%), and other targeted funding.

A key achievement in the 2020–2024 period was a **significant increase in funding from international providers**, which clearly demonstrates the University's ability to compete at the international level. While revenue from international projects amounted to approximately CZK 12 million in 2020 and 2021, it reached CZK 32 million in 2023 and CZK 38 million in 2024.

From the perspective of organisational units, non-investment financial resources for R&D are allocated as follows: Faculty of Chemical Technology (61.5%), Faculty of Arts and Philosophy (11.1%), Faculty of Transport Engineering (8.2%), Faculty of Economics and Administration (3.3%), Faculty of Electrical Engineering and Informatics (4.7%), Faculty of Restoration (2.4%), and Faculty of Health Studies (0.7%). This distribution primarily reflects the size and strategic focus of each faculty. The remaining funds are allocated to university-wide projects involving all faculties.

Five Key Research Projects Across Organisational Units

1. Multidisciplinary Project ONCOLIPID – *Oncolipidomics: Why is Lipidomic Dysregulation Pattern in Blood Similar for Various Cancers?*

EU/ERC Advanced Grant, FChT, Prof. Holčápek, 2023–2028

The project aims to elucidate the mechanisms driving changes in lipid concentrations and compositions in the blood during the onset of oncological diseases. This will be achieved through a combination of analytical and biological approaches, including lipidomic analysis via mass spectrometry, as well as metabolomic, proteomic, and transcriptomic data analysis. The project seeks to develop new methods for cancer detection and contribute to the targeted development of pharmaceuticals designed to address dysregulated pathways^[1].

2. Multidisciplinary Project MADRAS – *New Materials and Processing in Organic Electronics*

EU/Horizon 2020, FChT, Assoc. Prof. Syrový, 2020–2023

The project addressed the need for the development and utilisation of novel materials for manufacturing products in the field of organic and large-area electronics. Its objective was to improve electrical characteristics, processability, stability, and lifespan of devices based on innovative materials and processes. The project's multidisciplinary nature lay in the integration of various processes, including in-mould technology, functional electronics printing, thermoforming, and injection moulding. The wide applicability of the project's outcomes led to the development of printed structures for sensor applications in monitoring food storage conditions and sensors for the automotive industry^[2].

3. Project HELMET – *EGNSS High Integrity Layer for Multimodal Eco-Friendly Transport* **Horizon 2020 – Collaborative Projects, FEEI, 2020–2023**

The project focused on the utilisation of EGNSS satellite systems (EGNOS and Galileo) to develop safe mobility applications enabling highly accurate and integrity-assured vehicle positioning services. Its aim was to provide new EGNOS and Galileo applications for connected and autonomous vehicles, railway safety, and UAV-based surveillance systems for road and rail infrastructure.

The key goal was to develop a cyber-secure multimodal, multi-sensor integrity monitoring architecture using an EGNSS layer, leading to a high-integrity positioning system (LDS) for automotive and railway applications. The innovative algorithms developed within this multisensor framework were tested in Italy at the EMERGE test site in L'Aquila. One of the project's main objectives was to contribute to eco-friendly mobility by reducing energy consumption and emissions. The project drew upon the consortium's expertise in utilising SBAS-EGNOS technology to establish a multi-frequency and multi-sensor domain for mitigating risks in land transportation.

Continuity Project: VICE4RAIL – Hybrid Virtualised Testing for EGNSS Certification in Railway Train Positioning

Horizon Europe – Collaborative Projects, 2024–2027

This follow-up project aims to accelerate the adoption of EGNSS (European Global Navigation Satellite System) for an efficient, resilient, and competitive European Rail Traffic Management System (ERTMS). It focuses on developing certification and standardisation processes for EGNSS applications, addressing gaps in safety-critical applications for railways, and advancing the convergence towards an EGNSS-based ERTMS solution at a pan-European level. The starting point is the use of EGNOS V2 (European Geostationary Navigation Overlay Service) and virtual balises, paving the way for further applications based on absolute train positioning and EGNOS V3^[3].

4. Projekt System Suitability Study for Train Positioning Using GNSS in ERTMS

Navigation and Innovation Support Programme – European Space Agency, 2019–2020, FEEI

This project assessed the feasibility of using the current generation of SBAS overlay services to advance the European Rail Traffic Management System (ERTMS) with virtual balises detected via GNSS. The study focused on the current European SBAS system (EGNOS V2) and included the following aspects:

- Assessment and consolidation of requirements, including assumptions for detecting virtual balises using GNSS within ERTMS
- Suitability analysis of EGNOS for ERTMS applications
- Evaluation of the existing safety case for EGNOS in terms of recognition by railway safety authorities, verified by an independent safety assessor.

This project was a key step towards integrating GNSS into safety-critical railway applications and contributed to the development of innovative solutions, such as virtual balise detection within ERTMS. The study's findings will support the railway industry in refining safety assumptions for GNSS use in ERTMS virtual balise reader subsystems^[4].

5. Projekt Combatting Self-Righteousness: a Vice of the Digital Age

ERC CZ, 2024–2028, Faculty of Arts and Philosophy

Led by **Prof. John Andrew Lippitt, BSc (Hons), MLitt**, this project draws from moral philosophy and the sociology of digital media cultures to address a significant ethical challenge: self-righteousness, which threatens our ability to coexist with mutual understanding and respect for differing views. The research aims to develop the first in-depth analysis of moral self-righteousness as one of the defining vices of the digital age, both at the individual and group levels. It will also explore its relevance in understanding phenomena such as "echo chambers" and specific forms of anger that fuel societal polarisation. The research team, led by John Lippitt, investigates strategies to combat moral self-righteousness, including fostering virtues such as greater generosity in discourse to help mitigate social divisions^[5].

HTML links to additional documentation:

[1] *ONCOLIPID* Project: <https://www.upce.cz/en/scientist-from-the-university-of-pardubice-receives-prestigious-european-grant-for-research-on>

<https://erc.europa.eu/sites/default/files/2023-03/erc-2022-adg-results-ls.pdf>

<https://cordis.europa.eu/project/id/101095860>

[2] *MADRAS* Project: <https://fcht.upce.cz/en/projekt/1034481>

<https://madras-project.eu/>

<https://cordis.europa.eu/project/id/862492>

[3] *EGNSS Layer* Project: High integrity EGNSS Layer for Multimodal Eco-friendly Transportation | HELMET | Project | Fact sheet | H2020 | CORDIS | European Commission

[4] *System Suitability Study for Train* Project: [ESA's NAVISP Programmes](#)

[5] *Combatting Self-Righteousness* Project: [Self-righteousness | Centre for ethics](#)

4.10.1 Total budget of the HEI

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
University of Pardubice	6.708.730 / 264.644.181	70%	12%	18%
FAP	632.724 / 24.959.527	70%	12%	18%
FR	187.841 / 7.409.901	70%	12%	18%
FChT	2.690.455 / 106.132.347	70%	12%	18%
FEA	515.293 / 20.327.140	70%	12%	18%
FTE	711.286 / 28.058.619	70%	12%	18%
FEEI	427.333 / 16.857.318	70%	12%	18%
FHS	409.671 / 16.160.592	70%	12%	18%
Other parts of university	1.134.127 / 44.738.738	70%	12%	18%

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	66	64	65	75	63	66.6
Applied Research	19	21	20	18	18	19.2
Experimental development and innovation	15	15	15	7	19	14.2
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
EU	H2020 – ERC grants	Towards New Generation of Solid-State Photovoltaic Cell: Harvesting Nanotubular Titania and Hybrid Chromophores – CHROMTISOL	103 272.53 / 2 617.96				
WGF	Conference and Workshop Grants	Why the World Needs Anthropologists: Mobilising People		17 629.98 / 446.92			
EU	H2020 – Marie Skłodowska-Curie Action	Moral Impossibility: Rethinking Choice and Conflict (MIGHT)			57 719.19 / 1 463.18	80 327.64 / 2 036.31	5 232.64 / 132.65
EDA	Ad Hoc Research & Technology Project/ Programme	European Detonation Code [EuDetCode]			2 538.01 / 64.34	25 976.78 / 658.51	19 980.28 / 506.50
EU	H2020 – Marie Skłodowska-Curie Action	Philosophy as Cultural Self-Knowledge: R. G. Collingwood, Peter Winch and the Human Sciences (WC-Cult)			73 029.84 / 1 851.31	1 248.63 / 31.65	
EU	HE – ERC grants	Oncolipidomics: Why is lipidomic dysregulation pattern in blood similar for various cancers? (ONCOLIPID)				376 698.65 / 9 549.31	1 702 432.78 / 43 156.67
ONR Global	Support for the seminar	The organisation of the 25th edition of the international seminar – New Trends in Research of Energetic Materials				8 424.97 / 213.57	
ONR Global	Support for the seminar	The organisation of the NTREM2024 international seminar					9 349.11 / 237.00

EU	MSCA4Ukraine	Using public transport system for sustainable urban freight delivery				42 815.21 / 1 085.37	91 538.76 / 2 320.51
EU	HE – Collaborative projects	WIDEn performance in research and innovation capacity and competence Across EU					257527.5 / 6528.32
Total			103 272.53 / 2 617.96	17 629.98 / 446.92	133 287.04 / 3 378.83	535 491.88 / 13 574.72	69 001.83 / 2 721 965.52
In the role of another participant							
Provider/ Investor	Programme/ Grant Scheme	Project name	Support (in thousands CZK/EUR)				
			2020	2021	2022	2023	2024
EU	H2020 – Collaborative projects	Switch and Crossing Optimal Design and Evaluation (S-CODE)	1 347.04 / 34.15				
EU	H2020 – Collaborative projects	EGNSS Layer with High Integrity for Multimodal Eco-Friendly Transport – HELMET	58 111.87 / 1 473.14	49 206.41 / 1 247.38	7 809.36 / 197.97		
ESA	Navigation and Innovation Support Programme	System Suitability Study for Train Positioning Using GNSS in ERTMS in 2020	15 766.69 / 399.69				
EU	H2020 – Collaborative projects	New Materials and Processing in Organic Electronics (MADRAS)	51 751.09 / 1 311.89	88 472.83 / 2 242.79	86 615.47 / 2 195.70	16 013.72 / 405.95	6 096.64 / 154.55
EU	HE – Collaborative projects	INVENTHEI – INnoVation and ENTrepreneurship in HEIs		41 084.01 / 1 041.48	52 700.84 / 1 335.97	28 285.83 / 717.05	
EU	HE – Collaborative projects	Joint Industrial Data Exchange Pipeline (JIDEP)			10 979.12 / 278.32	38 227.12 / 969.06	33 687.26 / 853.97
EU	HE – Collaborative projects	Innovative environmental multisensing for waterbody quality monitoring and remediation assessment (IBAIA)			3 999.69 / 101.39	85 766.14 / 2 174.17	58 631.03 / 1 486.30

EU	HE – Collaborative projects	Building a Community of Railway Scientific Researchers and Academia for ERJU and Enabling a Network of PHDS (Academia Teaming With Industry) – ACADEMICS-4RAIL				1 937.20 / 49.11	14 603.87 / 370.21
EU	HE – Collaborative projects	Smart sensors and self-healing functionalities embedded for battery longevity with manufacturability and economical recyclability (SALAMANDER)				33 106.85 / 839.26	65 257.53 / 1 654.28
EU	HE – Collaborative projects	INnoVation and ENTrepreneurship in HEIs (Deep INVENTHEI)				24 374.81 / 617.90	2 976.59 / 75.46
EU	HE – Collaborative projects	European Bus Rapid Transit of 2030: electrified, automated, connected (EBRT2030)					54 420.27 / 1 379.55
EU	HE – Collaborative projects	Extending the Rail Network of PhDs in Europe's Rail Joint Undertaking (PhDs EU-Rail)					92 596.45 / 2 347.32
EU	HE – Collaborative projects	Hybrid Virtualised Testing for EGNSS Certification in Railway Train Positioning (VICE4RAIL)					28 580.20 / 724.51
EU	HE – Marie Skłodowska-Curie Action	METAMOR-PHOSIS					7 411.24 / 187.88

DBU	Förderthema 10: Bewahrung und Sicherung national wertvoller Kulturgüter vor schädlichen Umwelteinflüssen	Concept of preventive conservation, safeguarding, and preservation of the wall painting cycle in the Emmaus Monastery in Prague				57 078.73 / 1 446.95	59 227.40 / 1 501.41
EDA	Education and training programme on energetic materials	Education and Training Programme on Energetic Materials (ETPEM)					11 992.11 / 304.00
Total			3 218.86 / 126 976.69	4 531.65 / 178 763.24	4 109.35 / 162 104.48	7 219.44 / 284 790.40	11 039.43 / 435 480.60

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
Czech Science Foundation (GA ČR)	Standard projects	47 projects	42 709.89	38 068.13	42 989.84	47 838.46	47 017.73
			/	/	/	/	/
			1 684 808.28	1 501 701.38	1 695 851.68	1 887 118.74	1 854 742.80
GA ČR	Junior projects	3 projects	7 223.06	7 234.31	7 558.63	211.57	
			/	/	/	/	
			284 933.33	285 377.12	298 170.81	8 345.96	
GA ČR	International projects	1 project	1 767	1 803	522		
			/	/	/		
			69 704.14	71 124.26	20 591.72		
GA ČR	POSTDOC INDIVIDUAL FELLOWSHIP – outgoing	1 project					1486
							/
GA ČR	POSTDOC INDIVIDUAL FELLOWSHIP – incoming	1 project					58 619.33
					932	869	1475.24
					/	/	/
Technology Agency of the Czech Republic (TA ČR)	Transport 2020+	3 projects			36 765.29	34 280.08	58 194.87
				5 836.25	7 464.63	8 860.79	7 142.93
				/	/	/	/
TA ČR	Transport 2030 – 1st Public Call	1 project		230 226.82	294 462.72	349 538.07	281 772.39
							2 349.64
							/
TA ČR	ÉTA – Programme for Supporting Applied Social Sciences and Humanities Research, Experimental Development, and Innovation	1 project					92 687.97
			1 122.7	266			
			/	/			
TA ČR	GAMA 2 – Applied Research, Experimental Development, and Innovation Programme	1 project	44 287.97	10 493.10			
TA ČR	THÉTA – Applied Research, Experimental Development, and Innovation Programme	1 project	7 440.75	8 457.18	3 429.9		
			/	/	/		
			293 520.71	333 616.57	135 301.78		
TA ČR	THÉTA – Applied Research, Experimental Development, and Innovation Programme	1 project					
					4 261.25	4 566.55	5 125.75
					/	/	/
					168 096.65	180 140.04	202 199.21

TA ČR	M-ERA.NET 3 Programme	2 projects			1 459.4 / 57 570.02	1 922.2 / 75 826.43	3 235.85 / 127 646.94
TA ČR	SIGMA – 1st Public Call, DC3	2 projects				1 174 / 46 311.64	3 494.5 / 137 850.10
TA ČR	SIGMA – 2nd Public Call, DC2	1 project					1 190 / 46 942.80
TA ČR	SIGMA – 4th Public Call, DC1	1 project					97 / 3 826.43
TA ČR	ZÉTA – Programme for Supporting Applied Research	5 projects	8 456 / 333 570.02	6 646.93 / 262 206.31	1 821.15 / 71 840.24		
Ministry of Culture	NAKI II	4 projects	10 793.84 / 425 792.50	9 438.11 / 372 312.03	8 220.09 / 324 263.91		
Ministry of Culture	NAKI III	1 project				2 229 / 87 928.99	2 040 / 80 473.37
Ministry of the Interior	Security Research Programme of the Czech Republic 2023–2029 (OPSEC)	1 project				1 582.5 / 62 426.04	1 942.5 / 76 627.22
Ministry of the Interior	Security Research Programme of the Czech Republic 2015–2020 (BV III/1-VS)	1 project	781 / 30 808.68	42 / 1 656.80			
Ministry of Health	Programme for Supporting Applied Medical Research 2020–2026	1 project		2 530.34 / 99 816.17	3 826.35 / 150 940.83	3 900.92 / 153 882.45	3929 / 154 990.14
Ministry of Agriculture	1st Public Call Announced in 2023	1 project					3 123.9 / 123 230.77
Ministry of Education, Youth and Sports (MEYS)	ERC CZ	2 projects				2 153 / 84 931	13 349.74 / 526 617

MEYS	INTER-ACTION	3 projects	2 892.50 / 114 102.56	2 888.15 / 113 930.97		2 801.75 / 110 522.68	1 100.63 / 43417.16
MEYS	INTER- INFORM	1 project	1 210.35 / 47 745.47				
MEYS	Large Research Infrastructures	1 project	18 566.00 / 732 386.59	19 178.00 / 756 528.60	20 409.00 / 805 088.76	16 160.00 / 637 475.35	14 830.00 / 585 009.86
MEYS	Operational Programme Research, Development and Education (OP RDE)	11 projects	72 685.60 / 2 867 282.13	83 621.04 / 3 298 660.34	61 213.58 / 2 414 736.73	4 779.60 / 188 544.30	
MEYS	Operational Programme Johannes Amos Comenius – Research (OP JAK – Research)	4 projects				7 043.08 / 277 833.68	70 175.11 / 2 768 248.99
Total			175 648.69 / 6 928 942.38	186 009.44 / 7 337 650.47	164 107.82 / 6 473 681.14	106 092.42 / 4 185 105.45	183 105.52 / 7 223 097.35
In the role of another participant							
Provider / Investor	Programme/Grant Scheme	Project name	Support (in thousands CZK/EUR)				
			2020	2021	2022	2023	2024
Czech Science Foundation (GA ČR)	Standard projects	14 projects	9994 / 394 240.63	9 364.73 / 369 417.36	4 926.27 / 194 330.18	4 502.48 / 177 612.62	3 858.44 / 152 206.71
GA ČR	EXPRO	1 project				3 530.5 / 139 270.22	3 958.5 / 156 153.85
Technology Agency of the Czech Republic (TA ČR)	Transport 2020+	5 projects	3 571.17 / 140 874.56	5 858.08 / 231 087.97	4 167.88 / 164 413.41	3 288.27 / 129 714.79	549.32 / 21 669.43
TA ČR	Transport 2030 – 1st Public Call	2 projects					3023 / 119 250.49

TA ČR	ÉTA – Programme for Supporting Applied Social Sciences and Humanities Research, Experimental Development, and Innovation	2 projects	1 054.58 / 41 600.79	131.18 / 5 174.75	758.36 / 29 915.58	451.42 / 17 807.50	
TA ČR	National Centres of Competence	8 projects	3 418.96 / 134 870.22	2 966.06 / 117 004.34	2 053.69 / 81 013.41	7 968.9 / 314 355.03	9 824.95 / 387 571.99
TA ČR	EPSILON – Support for Applied Research and Experimental Development	8 projects	7 839.7 / 309 258.38	6445.1 / 254 244.58	2968 / 117 080.87		
TA ČR	THÉTA	2 projects	1160 / 45 759.37	1175 / 46 351.08	582.5 / 22 978.30		870 / 34 319.53
TA ČR	Environment for Life – 7th Public Call	1 project					1220 / 48 126.23
TA ČR	SIGMA – 1st Public Call, DC3	1 project				57.5 / 2 268.24	165 / 6 508.88
TA ČR	SIGMA – 2nd Public Call, DC2	1 project					827.5 / 32 643.00
TA ČR	TREND	7 projects		1000 / 39 447.73	903.85 / 35 654.83	3 599.79 / 142 003.55	8 596.68 / 339 119.5
Ministry of Culture	NAKI III	1 project					1735 / 68 441.81
Ministry of Industry and Trade	Operational Programme Technology and Applications for Competitiveness – Applications (OP TAK – Applications)	16 projects	7 564.86 / 298 416.57	7 680.04 / 302 960.16	18 261.01 / 720 355.42	11 280.88 / 445 005.13	1 583.47 / 62 464.30
Ministry of Industry and Trade	TRIO (2016-2021)	11 projects	8 278 / 326 548.32	4 997 / 197 120.32	1226 / 48 362.92		

Ministry of the Interior	Security Research Programme of the Czech Republic 2015–2020 (BV III/1-VS)	1 project	125.19 / 4 938.46				
Ministry of the Interior	Strategic Support for the Development of Security Research in the Czech Republic 2019–2025 (IMPAKT 1)	1 project		600.49 / 23 687.97	627.11 / 24 738.07	613.8 / 24 213.02	613.8 / 24 213.02
Ministry of Health	Public Call for Targeted Support by the Ministry of Health for 2024–2027	1 project					678 / 26 745.56
Ministry of Agriculture	Ministry of Agriculture Applied Research Programme 2017–2025 (ZEMĚ)	1 project	825 / 32 544.38	785 / 30 966.47	675 / 26 627.22		
MEYS	INTER-EUREKA	1 project					373.13 / 14 718.93
MEYS	Operational Programme Research, Development and Education (OP RDE)	2 projects	4 219.84 / 166 463.16	4 550.48 / 179 506.09	3 428.46 / 135 244.79		
MEYS	Operational Programme Johannes Amos Comenius – Research (OP JAK – Research)					736.27 / 30 109.21	26 943.28 / 1 062 851.39
Total			48 051.30 / 1 895 514.79	45 553.16 / 1 796 968.84	40 578.13 / 1 600 715.19	36 029.81 / 1 421 294.28	64 820.07 / 2 557 004.73

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
BORCHERS GMBH	UPCE Technology and Material and Technical Details		2 067 / 81 538			
Cologne press, a.s.	Research and Development of Printed Sensor Elements		87 / 3432	245 / 9 665	415 / 16 371	
České dráhy, a.s. (Czech Railways)	Development and Management of an Information System		831 / 32 781	1 525 / 60 158	1 051 / 41 460	100 / 3 945
Czech Telecommunication Office	Research Task – Measurement Audit		782 / 30 848	701 / 27 653	782 / 30 848	701 / 27 653
DEMCAK s.r.o.	Preparation and Optimisation of Sensor Strips			201 / 7 929	112 / 4 418	195 / 7 692
FONS JK Group, a.s.	Technology Development, Including Intellectual Property Rights				1 682 / 66 351	
Town of Jaroměř	Historical Research			1 299 / 51 243		
Mondi Štětí a.s.	Simulation of the Bleaching Cycle with Additives		410 / 16 174	500 / 19 724		
Pardubice Region	Research				100 / 3 945	545 / 21 499
Pardubice Business Incubator	P-Pink					600 / 23 669
Pražská strojírna a.s.	Research and Optimisation of the Wheelset–Track Interface		760 / 29 980		610 / 24 063	
PYROTECHNICKÁ SLUŽBA s.r.o.	Modification of Production Technology..., Verification of a New Carrier...		44 / 1 736	95 / 3 748	533 / 21 026	412 / 16 252

Rolling Stock Lease s.r.o.	Optimisation of Maintenance Interventions on the Running Profiles of Locomotive Wheels		250 / 9 862		365 / 14 398	
Railway Administration	Technical Report, Revision of the Standard Sheet		447 / 17 633	34 / 1 341	1 481 / 58 422	
ŠKODA AUTO a.s.	Research and Development of Antimicrobial Modifications of Plastics, Study on the Usability of Hydrogen, Dynamic Shear Testing of RSW, EKX2 – Surface Disinfection of Lights, ...		455 / 17 949	405 / 15 976	548 / 21 617	360 / 14 201
Providers in the CZK 400,000–500,000 Range	R&D		10 / 394	24 / 947	1 231 / 48 560	1095 / 43 195
Providers in the CZK 300,000–400,000 Range	R&D		732 / 28 876	839 / 33 097	1310 / 51 677	1065 / 42 012
Providers in the CZK 200,000–300,000 Range	R&D		281 / 11 085	490 / 19 329	761 / 30 020	1105 / 43 590
Providers in the up to CZK 200,000 Range	R&D		819 / 32 308	1 077 / 42 485	1 224 / 48 284	1 087 / 42 880
Unidentified	R&D	4 823 / 190 256				
Total		4 823 / 190 256	7 975 / 314 596	7 435 / 293 295	12 205 / 481 460	7 265 / 286 588
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:

Institutional support for LCDRO constitutes a significant budgetary component of UPCE's R&D&I activities, playing a crucial role in shaping the development of research and innovation efforts. Between 2020 and 2024, LCDRO accounted for approximately 45% of the non-investment financial resources allocated to R&D&I.

Strategy

The UPCE management has opted not to burden staff with the preparation of internal projects or to allocate granted financial resources to their evaluation, considering both time and financial efficiency. Instead, the targeted allocation of LCDRO financial resources to faculties is regarded as a more effective and administratively streamlined approach. Faculties, in accordance with their budgetary rules, ensure the optimal use of allocated funds and provide regular feedback on their utilisation and the medium-term outcomes achieved.

This strategy ensures the efficient allocation of financial resources with minimal administrative burden while aligning with UPCE's strategic priorities – namely, supporting excellence, fostering research teams that achieve outstanding results, nurturing young researchers, and facilitating activities aimed at securing ERC projects. This funding model also enables high-risk research, which often serves as a foundation for subsequent projects funded by national and international providers. A portion of LCDRO funds, up to a predetermined limit (1.5%), is allocated to support university-wide activities related to the registration and evaluation of R&D&I outcomes.

Rules

Based on a strategic decision, each faculty is allocated financial resources proportionate to its share of R&D&I outputs and their evaluation in national and sectoral R&D&I assessment systems. The distribution of LCDRO funds among faculties is significantly influenced by the 2020 MEP evaluation. Each faculty has internal regulations defining the rules and principles for redistributing LCDRO funds. Principles for supporting excellent research teams, high-quality scientific outputs, or talented young researchers, along with examples of specific faculty directives, are outlined in **Section 4.2**. Comprehensive rules and guidelines for the redistribution of LCDRO funds at individual faculties are provided in the appendix^[1].

Support System for Research Teams

The prioritisation of research topics follows the **Strategic Plan** in alignment with the disciplinary focus of individual faculties. Based on an analysis of R&D&I activities for the period 2014–2018 (taking into account a ten-year period from 2009–2018), a detailed assessment of research performance was conducted at all faculties in 2019. Faculties identified their key disciplines in both

basic and applied research, pinpointed their most significant academics and research teams, and established priority topics for the medium term.

These decisions are annually reviewed as part of the faculties' strategic plan assessments, with key disciplines, teams, and academic staff being regularly updated. These priority research areas receive preferential support from LCDRO funds. The number of supported researchers varies across faculties, depending on the nature of research activities and faculty size (ranging from at least 2 to a maximum of 16 supported researchers per faculty). Following the completion of a five-year assessment cycle (evaluating the years 2016-2020), a stable framework for the use of institutional support for LCDRO was established to ensure faculties have a consistent funding source for research and creative activities.

System for Supporting Early-Career Researchers

Details are provided in Sections 4.2, 4.6, and 4.13.

System for Supporting the Acquisition of ERC Projects

At the university-wide level, support is provided mainly for project application preparation, project budgeting, and covering 50% of costs for an external international consultant. Assistance is also offered in arranging external consultations, such as through the **Technology Centre Prague**.

Example of LCDRO Use at a Professionally Oriented Faculty

If previous sections (see **Section 4.2**) have illustrated examples of research-oriented faculties, here is an example from a professionally oriented faculty, where research also receives substantial support:

At **FHS**, LCDRO funds are utilised primarily in four ways:

1. **Partial salary coverage** for FHS staff engaged predominantly in research and creative activities.
2. **Internal Grant Competition (IGS) funding** (see IGS Directive on SharePoint)^[1], where any academic staff member with an employment contract can apply for support. Project applications are reviewed by the Internal Research and Innovation Council (IRIC), which submits evaluations to the Dean of the Faculty. The council also monitors project outcomes and financial expenditure through interim and final reports. (For further details, see the IGS Directive on SharePoint)^[1].
3. **Performance-based research incentives**, distributed based on achieved R&D&I outputs (for details, see the FHS Premium System Directive on SharePoint)^[1].
4. **Administrative and operational expenses**, including funding for the **Research and Innovation Office**, staff training, courses, and smaller research-related expenditures (such as software, licences, and intellectual property protection).

HTML links to additional documentation:

[1] Directives: <https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M4>

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:

The University of Pardubice actively engages in research collaborations at both the national and international levels. These partnerships enhance the impact of research outputs, facilitate knowledge transfer, and contribute to the University's strategic objectives in scientific excellence and innovation. The following section presents key examples of successful cooperation with industry, public institutions, and international research organisations.

National Collaborations

1. Collaboration in the Railway Transport Sector

České dráhy, a.s. (Czech Railways) – A long-term collaboration with the Faculty of Transport Engineering (FTE) in various areas, including: performing the function of an independent capacity allocator for the national railway owned by Czech Railways; evaluation of loading and unloading sites; preparation of the Network Statement for the 2019/2020 timetable; preparation of the Network Statement for the 2021/2022 timetable and revision of the Network Statement for 2020/2021; the Network Statement for 2023 and 2024; and materials analysis.

Správa železnic (Railway Infrastructure Administration) – A long-term collaboration with FTE in the following areas: determining new vehicle resistance values for weight limits; revising and updating **Model Sheet Ž2**, reviewing related standards and regulations to ensure compliance with current legislation; and analysing the dynamic effects of vehicle motion in relation to track maintenance.

2. Collaboration in the Automotive Industry

Škoda Auto a.s. – A long-term collaboration with FTE, covering various areas such as: dynamic testing at different temperatures; analysis of casting mould failure (leakage) through metallographic examination at the damage site; dynamic strength testing of adhesives; the development of a CO₂ emissions calculator for logistics; and a study on the use of hydrogen for handling equipment at Škoda Auto.

3. Collaboration with the Pardubice Region

The Faculty of Arts and Philosophy (FAP) collaborated between 2020 and 2023 on the project "Innovative Approaches to Supporting At-Risk Families with Children in the Pardubice Region", funded under the Operational Programme *Employment Plus 2021–2027*. The project aimed to transform the care system for at-risk children and families to ensure more effective interventions.

The FAP UPCE coordinated the introduction of innovative family support methods at three Authority for Social and Legal Protection of Children (OSPOD) offices in Lanškroun, Žamberk, and Česká Třebová, as well as at the Regional Authority for Social and Legal Protection of Children. The initiative sought to individualise and coordinate intervention methods, fostering closer collaboration with other institutions within the child protection system.

Each participating office focused on different areas of transformation: divorce-related interventions, risk assessment in children's situations, family intervention planning, and the

professional role of child protection workers. By leveraging a support network of experts in child protection, psychology, and law, and incorporating international best practices from the Netherlands (Vanguard Method and service design methodology), the FAP UPCE facilitated a paradigm shift in the philosophy, operations, and vision of child protection agencies. The Regional Child Protection Department subsequently integrated these insights into its methodological guidelines. The transformation thus took place both in direct client work and at the systemic level.

Impact evaluations indicate that the new approach has improved outcomes for families and enhanced inter-institutional cooperation within the child protection system. The sustainability of the project's outcomes has been secured through a follow-up partnership project, "Together for Family Support in the Pardubice Region" (2024–2027), under the Ministry of Labour and Social Affairs' Operational Programme Employment. The project has also significantly contributed to redefining gender strategies in child-rearing practices.

4. Collaboration in Medicine and the Medical Industry

As part of research into cancer detection tests (linked to the creation of the **Lipidica** spin-off company and the **ERC Advanced Grant ONCOLIPID**), the Faculty of Chemical Technology (FChT) has established collaborations with multiple healthcare institutions, including Pardubice Regional Hospital, Masaryk Memorial Cancer Institute in Brno, University Hospital Olomouc, and the Czech Gastroenterological Society.

Research conducted in collaboration with several clinical centres has resulted in numerous high-impact international journal publications, patents, and an ongoing approved clinical study on the early detection of pancreatic cancer^[1].

5. Collaboration in Nanotechnology Research and Engineering

A long-term strategic collaboration between FChT and PARDAM, s.r.o., initiated by Dr. Macák's research team, has led to the development of advanced nanomaterials, primarily fibrous materials with significantly enhanced functional properties compared to conventional materials (such as sorbents, photocatalysts, and other advanced materials).

In recent years, this collaboration has resulted in the patenting and licensing of a novel method for producing submicron and/or micron tubes of crystalline tungsten oxide. The patent, titled "Method for Preparing Submicron and/or Micron Tubes of Crystalline Tungsten Oxide and Submicron and/or Micron Tubes of Crystalline Tungsten Oxide Prepared by This Method", has been successfully licensed under an exclusive agreement^[2].

International Collaborations

1. Collaboration between FTE and the University of Naples Federico II, Italy (Prof. Di Ludovico's research group), and the University of Sannio, Italy (Assoc. Prof. Del Vecchio's research group)

The collaboration focuses on the experimental and numerical analysis of structural damage to buildings caused by earthquakes. As part of this partnership, **Dr. Özgür Yurdakul** completed a six-month postdoctoral fellowship (1 March 2021 – 31 August 2021), and doctoral student **Ing. Carmino Moliterno** subsequently undertook a research stay at the Department of Transport Structures at FTE UPCE (1 May 2023 – 31 July 2023). The research findings have been published in co-authored articles in prestigious **Jimp** journals and presented at international conferences. Additionally, in the same research field, FTE has established a long-term collaboration with **Eskişehir Technical University, Turkey** (Prof. Özgür Avcı's research group), which has contributed to several co-authored publications.

2. The Centre for Ethics as Study in Human Value at FAP UPCE

Supported by the Operational Programme Research, Development and Education (2017–2022), this project – led by Kamila Pacovská and Ondřej Beran – created an internationally recognised research infrastructure for ethics and moral philosophy within the Centre for Ethics at FAP UPCE^[3]. The research team included five Czech and ten international scholars, including three associate professors and one professor. The project focused on **the Anglo-Saxon tradition of moral philosophy**, resulting in numerous high-quality publications and the organisation of international conferences and workshops.

In terms of internationalisation, the Centre for Ethics successfully accredited an English-language doctoral programme, enabling knowledge transfer among early-career researchers. This initiative fostered an international community of doctoral students, who became integral members of the Centre's research activities, including hosting international doctoral conferences. Research outputs were disseminated not only through academic publications (books and peer-reviewed articles) but also via public engagement initiatives such as the Philosophy Voiced^[4] and a public-facing blog^[5].

The project was interdisciplinary, integrating philosophy, political science, aesthetics, religious studies, and the history of science, all unified by a shared focus on ethics and morality. The Centre has since attracted prestigious international scholars, including Prof. John Lippitt, who, in 2024, commenced work on the ERC CZ-funded project "Combatting Self-Righteousness: a Vice of the Digital Age" at the Centre.^[6]

3. Prestigious International Research Collaborations in Materials Science, Printing Technology, and Related Fields

FChT is actively involved in four **Horizon Europe** and **Horizon 2020** projects alongside leading European universities and research institutions:

- **IBAIA** (17 partners, led by Centre national de la recherche scientifique (CNRS), Paris, France): Development of sensor modules for environmental water quality monitoring^[7].
- **JIDEP** (13 partners, led by FHV Fachhochschule Vorarlberg, Dornbirn, Austria): Establishment of a platform for industrial data exchange within the circular economy^[8].
- **MADRAS** (12 partners, led by Eurecat Centre Tecnològic, Barcelona, Spain): Development of new materials for organic and large-area electronics^[9].
- **SALAMANDER** (11 partners, led by École polytechnique fédérale de Lausanne, Switzerland): Research on electrode materials for lithium batteries^[10].

4. Long-Term Collaboration with Leading French Universities

FChT maintains strategic partnerships with Université de Rennes 1, Université de Lille, Université de Bordeaux, Université Bourgogne Franche-Comté, Institut Fresnel (Aix-Marseille Université), and Institut des Matériaux Jean Rouxel (Université de Nantes). Research topics include lipidomic analysis, nanomaterials, chalcogenide glasses, and amorphous thin films.

This collaboration has resulted in numerous guest lectures by renowned international scholars at UPCE and approximately 80 co-authored publications in high-impact journals, including Nature Communications, Nature Cancer, and Nature Metabolism. Additionally, one of these publications has been recognised as a Highly Cited Paper in the ISI/WoS database.

5. Long-Term Collaboration between the Faculty of Restoration and German Institutions

The Faculty of Restoration (FR UPCE) has built a long-standing partnership with the Staatliche Akademie der Bildenden Künste Stuttgart and Technische Hochschule Köln, culminating in

a prestigious joint research project "Preventive Conservation, Stabilisation, and Preservation of the Mural Cycle in the Cloister of the Emmaus Monastery in Prague".

This project is conducted in strategic collaboration with the National Heritage Institute in Prague. The Emmaus Monastery mural cycle, dating back to the reign of Emperor Charles IV, is of extraordinary national and international significance. At the time of its creation, Prague was the cultural centre of the Holy Roman Empire.

The three-year research initiative (2023–2026) is funded by the Deutsche Bundesstiftung Umwelt (DBU). The project aims to conduct a detailed, multidisciplinary analysis of the mural's current condition, painting techniques, past interventions, and the factors contributing to its deterioration. The study employs state-of-the-art non-invasive diagnostic methods, which provide extensive information without compromising the integrity of the artwork. Some of these advanced analytical techniques have never before been used at this level of precision in the Czech Republic.

The research is unprecedented in its complexity at an international level, and findings will be disseminated through publications in international journals and presented at a high-profile international conference at the project's conclusion.

HTML links to additional documentation:

[1] <https://www.lipidica.com/>

<https://cordis.europa.eu/project/id/101095860>

<https://www.upce.cz/en/pancreatic-cancer-screening>

<https://fcht.upce.cz/en/pancreatic-cancer-detection-at-early-stages>

[2] [Centre of Materials and Nanotechnologies – CEMNAT | University of Pardubice](#)

[3] [Centre for ethics](#)

[4] [Philosophy voiced | Centre for ethics](#)

[5] [BLOG | Centre for ethics](#)

[6] [Self-righteousness | Centre for ethics](#)

[7] <https://ibaia.eu/>

[8] <https://www.jidep.eu/>

[9] <https://madras-project.eu/>

[10] <https://www.salamander-eu.com/>

STUDIES

4.13 Doctoral studies

The HEI will briefly describe the organisation of the doctoral studies (if there are any doctoral study programmes³⁷). 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 graduates³⁸.
- 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:

Accreditation and Evaluation of PhD Programmes

The University of Pardubice offers doctoral degree programmes (PhD) accredited in nine fields of study¹. The academic disciplines associated with these programmes are evaluated annually in terms of their quality and sustainability. From a coordination and methodological perspective, PhD programmes fall under the remit of the Vice-Rector for Research, who also serves as the Chair of the *Internal Grant Agency of UPCE (IGA)*. Through the IGA, financial resources are distributed to doctoral research projects via the *Student Grant Competition (SGS)* (see below). The specific disciplinary focus and implementation of PhD programmes are the responsibility of individual faculties and are aligned with their accredited study programmes. All PhD programmes have duly established subject advisory boards, which include external members serving as oversight bodies.

Faculty	Accredited DSPs	Number of DSP Students (as of 1 December 2024)	
		Full-time (of which international)	Part-time (of which international)
FChT	24 (12 CZ + 12 AJ)	92 (17)	42 (8)
FEA	7 (4 CZ + 3 AJ)	21 (11)	9 (5)
FAP	4 (2 CZ + 2 AJ)	36 (13)	18 (1)
FTE	4 (2 CZ + 2 AJ)	18 (6)	26 (3)
FEEI	2 (1 CZ + 1 AJ)	13 (3)	13 (3)
FR	1 (1 CZ)	1 (0)	5 (0)
FHS	0	0	0

Table: Number of Doctoral Students at UPCE

³⁷ If the HEI does not organise any doctoral programme, it will explicitly state this information in the self-evaluation report.

³⁸ The HEI will list the top five highest ranked graduates in academia, the private sector, and public administration over the past five years.

Supervision and Academic Staffing in PhD Programmes

DSP supervisors are primarily drawn from UPCE's own academic and research staff, with external specialists from other institutions in the given field appointed only in exceptional cases. Based on long-term collaboration agreements, researchers from the Czech Academy of Sciences (CAS) also act as PhD supervisors at various faculties, participating in subject advisory boards and serving as specialist supervisors. In PhD programmes, particularly in technical faculties, collaboration with industry partners is a key feature. Besides their primary supervisor, doctoral students often have a specialist supervisor who provides additional research guidance and support.

In 2023, all faculties adopted PhD supervision standards. Given the differences between technical, natural science, and humanities study programmes, each faculty has its own specific regulation, the *Standards for PhD Supervisors*. However, all regulations set limitations on the number of doctoral candidates per supervisor, ensure regular consultations, and prevent conflicts of interest. Doctoral students at UPCE can also participate in a mentoring programme, where, in addition to academic supervision, they are supported by a **mentor** who focuses on their well-being and broader personal development.

Career Support for PhD Students

Like other students, PhD candidates benefit from the University's **Career Centre**, which plays a key role in preparing graduates for a smooth transition into the job market. Through partnerships with industry experts, students gain insights into current employment trends and develop practical skills that enhance their competitiveness. Training in self-presentation and stress management helps build their confidence and readiness for real-world work scenarios. This approach fosters a strong connection between graduates and the University as an institution providing long-term support. The personalised nature of these activities, combined with structured feedback, strengthens students' sense of achievement in their professional development.

Most PhD graduates go on to pursue academic or research careers, with a significant number securing positions in ministries and cultural or public sector institutions. A notable proportion also successfully transition into private-sector roles, where they continue to develop their research expertise.

Faculty	DSP Supervisors (as of 1 December 2024)				Total DSP Supervisors
	Internal (UPCE)	External (Other HEIs)	External (Czech Academy of Sciences)	External (Industry and Other Sectors)	
FCHT	58	0	1	1	60
FEA	14	1	0	0	15
FAP	24	4	2	3	33
FTE	33	0	0	0	33
FEEI	13	0	1	0	14
FHS	0	6	0	0	6

Table: Supervisors of Doctoral Study Programmes at UPCE

Prevalence of English-Language PhD Programmes

Most doctoral degree programmes at UPCE are accredited in English, allowing faculties to admit international applicants. In some cases, the English-language PhD programme has even surpassed its Czech counterpart. For example, the *Philosophy* PhD programme has significantly expanded within the internationally oriented *Centre for Ethics*, with 20 doctoral students enrolling between its establishment in 2017 and 2024. Of these, eight candidates have successfully defended their dissertations before an international panel of reviewers from leading global universities, and to date, no student has discontinued their studies^[2].

International Cooperation in PhD Programmes

UPCE collaborates with international universities in PhD programmes in two primary ways: first, through regular research stays for PhD students at partner institutions abroad (a long-term research stay abroad is a compulsory part of PhD study plans), and second, through **cotutelle** (joint doctoral supervision). The number of cotutelle students has increased during the evaluation period, with ongoing and successfully completed cotutelle programmes at the Faculty of Arts and Philosophy (FAP) with *L'Université Paris 8*, *Universiteit Antwerpen*, *Leiden University*, *Universidad Autónoma de Madrid*, and the *University of Reims Champagne-Ardenne* (5 students) and at the Faculty of Chemical Technology (FChT) with the University of Rennes and Tampere University (3 students).

Since 2007, a long-standing *Agreement on the Cooperative Graduate Program* with the *National Institute for Materials Science* (NIMS) in Tsukuba, Japan, has enabled PhD students and early-career researchers to undertake long-term mobility placements (six-month or one-year research stays) at this prestigious institution. Between 2020 and 2024, this programme included seven female and one male PhD students from the Faculty of Chemical Technology. Another key agreement, building on previous memoranda to strengthen scientific cooperation with the *National Institute of Advanced Industrial Science and Technology* (AIST), also based in Tsukuba, Japan, primarily supports the creative activities of early-career researchers.

At the university level, UPCE has provided long-term support for the *European Industrial Doctoral School*, an informal network of five universities (*Umeå University*, Sweden; *Bangor University*, UK; *Ghent University*, Belgium; *University of Aveiro*, Portugal; and UPCE). This platform promotes shared principles (scientific excellence, competitiveness, education, mobility, contractual agreements, and funding) and aims to train PhD students in collaboration with industry partners.

Recruitment of International PhD Students

The recruitment of international PhD students is primarily conducted on an individual basis, in alignment with faculty strategies and academic specialisations. It builds upon international collaborations, the reputation of specific research teams, supervisors, and departments, and leverages existing cooperation agreements at both university and faculty levels. Between 2020 and 2024, additional bilateral and framework agreements for student and academic exchanges were signed, bringing UPCE's total to over 450 active agreements. Additionally, these agreements were increasingly digitised, with nearly half concluded online via the IS/STAG portal. Furthermore, *Erasmus Learning Agreements* are now arranged online through the *Erasmus Without Paper* platform.

As a supplementary tool for promoting PhD programmes to potential international applicants, UPCE also utilises centralised development projects funded by the Czech Ministry of Education, Youth, and Sports (MEYS), such as the *Intercultural and International Networking (3uni interNET)* project (Project No. C25(2019)), as well as institutional development projects, including the *European Industrial Doctoral School*.

Admission Process and Recruitment of Doctoral Students

The admission process for doctoral study programmes (DSP) at the University of Pardubice involves principal investigators responsible for research projects and grants, as they actively participate in recruiting students into research and project teams. Targeted recruitment of international doctoral candidates is primarily conducted by major research centres such as *CEMNAT*, the *Centre for Ethics*, and the leaders of international projects (ERC, 7RP). These centres leverage subject-specific international platforms for outreach, such as the *PhilosL* advertisement regularly published by the *Centre for Ethics*^[3].

Despite efforts to attract more international students and researchers, certain external factors still pose limitations, including immigration policy measures, complex visa procedures, and the relatively low financial compensation for doctoral candidates and research staff in the Czech Republic, making the country less competitive compared to advanced economies in the Euro-American research landscape. Nevertheless, international doctoral candidates form a strong academic community, particularly within UPCE's leading research centres, contributing significantly to the University's reputation. For example, the Centre for Ethics currently hosts 13 doctoral students, three of whom are enrolled in a cotutelle programme. They regularly co-organise international conferences and attract doctoral candidates from around the world for long- and short-term research stays funded by their own resources.

Support System for International Doctoral Students

The *International Office* and the *Centre for International Mobility* (both part of *International Affairs and Development*) coordinate the support and care provided to international doctoral students enrolling at UPCE or arriving on research stays^[4]. UPCE offers international students comprehensive administrative and informational support before their arrival, during the admissions process, and throughout their studies. Assistance is provided in various aspects of academic life and general living conditions for foreigners in the Czech Republic, including visa and residence issues, accommodation, banking, taxation, health and social insurance, medical care, family life (including the education system), Czech culture, and language courses.

Since 2017, a detailed **Guidebook** has been available, providing essential information on living, working, and studying at the University, in the city, and in the surrounding area^[5]. To facilitate the adaptation of international students, UPCE organises activities such as **Orientation Week** and **Welcome Meetings** at individual faculties. The Language Centre offers both long-term and short-term Czech language courses, as well as cultural orientation courses, to ease the integration of international students into Czech society. Additionally, language training for UPCE staff, including administrative personnel, has been strengthened. A bilingual (Czech-English) regime is gradually being introduced into the University's information system.

Doctoral School and Mentoring Programme

Since 2023, a centrally organised **Doctoral School** has been implemented to support newly enrolled doctoral students. The pilot programme in 2023 was conducted in Czech only, but as of 2024, it is available in English as well^[6]. The Doctoral School introduces students to their peers and the research environment at UPCE while also providing information on the University's institutional support systems for research, well-being, career development, and counselling.

The academic workshops cover best practices in **research ethics, academic writing, referencing, and citation techniques**. The Doctoral School serves as a foundation for the University's broader **mentoring programme**, which extends beyond the first year of study^[7]. This mentoring initiative, now in its third year, offers tailored support in both career and research development, while also

focusing on improving doctoral students' soft skills. The programme is available to both doctoral students and postdoctoral researchers and consists of three main components:

- **Individual mentoring**, providing one-on-one consultations with experienced mentors,
- **Peer mentoring**, fostering knowledge-sharing and support among doctoral students,
- **Group educational events**, such as seminars, lectures, and workshops.

DOC TOR AL SCH OOL	Introductory information block	Knowled ge as a value	Open science	Development of pedagogical and presentation skills	Publication strategies	Project management and grant programmes supporting International cooperation	From Struggles to Success Career Empowerment and Ethical Publishing
CZ	20	16	19	23	30	19	9
EN	8		6	5	8	8	

Table: Number of graduates from individual blocks of the Doctoral School 2024/25

Postdoctoral Career Development

A **postdoctoral position** (within five years of completing a doctoral programme) at UPCE is classified under the rank of "Assistant Professor" (or its equivalent for research staff) and includes dedicated support for early-career researchers. The mentoring programme, which begins at the doctoral level, continues into the postdoctoral stage. Since 2009, UPCE has implemented the university-wide *System for Stimulating Research Activity among Students and Early-Career Academic Researchers*^[8], which has integrated postdoctoral positions into career development plans under faculty-specific internal funding schemes. The support for early-career researchers and postdoctoral staff was further strengthened through the *HR Strategy for UPCE Development* project, successfully implemented in recent years.

This initiative built on previous funding from the OP VpK and OP VVV programmes (2012–2023), which supported 55 international postdoctoral researchers at UPCE through projects such as POSTDOC, ROUTER, MEMO1, and MEMO2. Nine of these researchers continued their academic careers at UPCE after the project ended, either through other grants (for instance, GAČR) or by securing permanent positions at university departments.

Doctoral students at UPCE are systematically integrated into senior researchers' projects, ensuring their engagement in high-level research and preparing them for postdoctoral positions. Participation in an excellent research team is contingent upon the presence of doctoral students and postdoctoral researchers, reinforcing motivation for research careers. This support includes assistance with individual project applications. Importantly, UPCE's excellent research teams attract international postdoctoral researchers: in the highly competitive environment of the Czech Republic's most prestigious grant agency (GAČR), UPCE secured funding for two Postdoctoral Individual Fellowships – one under the INCOMING scheme and one under the OUTGOING scheme.

Doctoral Student Funding

The framework for doctoral scholarships is defined by the UPCE internal *Scholarship Regulations*^[9]. All full-time doctoral students receive a basic monthly stipend of approximately EUR 450, based on institutional funding from the Czech Ministry of Education, Youth, and Sports (MEYS). Each faculty applies its own incentive-based criteria to determine additional scholarship payments, which depend on students' academic performance, research progress, and involvement in research projects – potentially increasing the stipend by an additional EUR 600 per month.

Doctoral students also compete for additional funding through the *Student Grant Competition (SGS)*^[10], which supports research projects conducted by doctoral and master's students in direct connection with their studies at UPCE. The SGS serves as a key mechanism for encouraging student research activity and fostering academic development. It is managed by UPCE's Internal Grant Agency. In 2023, 21 projects across all seven faculties were selected for funding, with a total allocation of CZK 22,520,296.56. The total amount disbursed for specific university research reached CZK 22,747,777.

In 2023, 438 students, primarily doctoral candidates, participated in SGS projects. The programme resulted in 100 research articles in academic journals, 76 conference presentations, and 24 defended dissertations. Many doctoral students also won awards in thesis competitions organised by industry partners.

If a full-time doctoral student is employed on a research project at UPCE under a contract exceeding 0.5 FTE, they transition to part-time (combined) doctoral study. The feasibility of combining full-time doctoral studies with smaller research contracts (up to 50%) has been tested in recent years under the OP VVV project *Enhancing the Quality of Internal Grant Schemes* (since 2020). With the upcoming amendment to the Higher Education Act and the planned doctoral education reform at UPCE, the University aims to increase all doctoral stipends to a minimum guaranteed threshold of 1.2 times the national minimum wage (approx. €1,000 per month).

Infrastructure Support for Doctoral Students

Material and technical infrastructure support is an essential part of doctoral education at UPCE. The most significant initiative in this regard has been the *Infrastructure for Doctoral Study Programmes at the University of Pardubice (DSP INFRA)* project, funded under the Jan Amos Komenský Operational Programme (OP JAK). This project (2023–2025) is enhancing doctoral research infrastructure, including renovating classrooms to accommodate hybrid research seminars with international scholars.

HTML links to additional documentation:

- [1] <https://www.upce.cz/en/doctoral-studies>; Discover the right study programme | Studuj UPCE
- [2] [Current students and Graduates](#) | Centre for ethics
- [3] [Study PhD with us!](#) | Centre for ethics
- [4] [Contacts](#) | University of Pardubice
- [5] [University of Pardubice GUIDEBOOK](#)
- [6] [University Doctoral School](#) | University of Pardubice
- [7] [Mentoring](#) | University of Pardubice
- [8] [System of research stimulation for Students-Young Researchers](#) | University of Pardubice; [Concept of Support for Young Researchers](#) | University of Pardubice
- [9] [Scholarship Regulations](#) | University of Pardubice
- [10] Student Grant Competition: [Projects GAP](#) | University of Pardubice

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:

Following the previous evaluation, the International Evaluation Panel (MEP) provided a set of recommendations aimed at enhancing UPCE's research excellence, institutional sustainability, and international engagement. In response, UPCE has taken strategic measures across multiple areas, from fostering interdisciplinary collaboration and securing external funding to strengthening doctoral education and supporting postdoctoral researchers. The following sections detail the key actions undertaken to implement the recommendations and the outcomes achieved.

1. Organising Calls for Trans-Faculty Projects

Following the recommendation to "organise the calls for trans-faculty projects at the university level", the Vice-Rector for Research organised interfaculty meetings as part of the annual evaluation of excellent research teams. These meetings concluded that the most beneficial and effective approach is to collaborate across faculties by responding to externally announced project calls. This strategy ensures cross-faculty cooperation while not burdening the UPCE budget. Concrete outcomes of this strategy include a submitted application for the accreditation of a joint doctoral programme between the Faculty of Health Studies (FHS) and the Faculty of Chemical Technology (FChT), as well as interfaculty projects submitted in TA CR calls and many others.

2. Ensuring Sustainable Funding for the Faculty of Arts and Philosophy

The recommendation highlighted concerns regarding "the risk of the Faculty of Arts and Philosophy relying primarily on external revenue, threatening the sustainability of the Centre for Ethics." In response, efforts were made to improve the financial management and orientation of this faculty, securing external funding sources. As a result, the Centre for Ethics has successfully covered its mandatory sustainability period and operational expenses through funds from ERC, MSCA Fellowships, GA CR, and the Czech Academy of Sciences. The faculty has never been as active in submitting and securing projects as it is today.

3. Increasing the Number and Productivity of Research Centres

Despite overall commendation, UPCE was advised that "the number and productivity of all research centres should increase." Given the budget reductions affecting all Czech universities, UPCE approached this recommendation cautiously to ensure that supporting new research centres does not compromise the education of future generations. A compromise solution was found: the number and size of excellent centres were maintained, while the number of excellent (including junior) research teams was increased, forming a foundation for future centres of excellence. As a result, the production of excellent research has increased. One example of progress towards a long-term goal is the increased number of publications in higher quartiles, as shown in the table below:

Publication Activity at UPCE (AIS Metric, FORD-WOS Classification)

UPCE	Decile	Q1	Q2	Q3	Q4
2019	12	51	87	58	44
2020	8	50	127	54	38
2021	15	61	129	46	36
2022	13	47	146	33	25
2023	18	51	138	39	22

4. Addressing the Decline in Doctoral Student Numbers

To counteract the decline in doctoral student enrolment observed from 2016 to 2019, UPCE increased its recruitment of international students and launched new English-taught doctoral programmes. However, the total number of doctoral students cannot be significantly increased due to legislative changes: from 2025, doctoral students must receive a minimum stipend equivalent to at least 1.2 times the national minimum wage (approximately EUR 1,000 per month), nearly double the current standard stipend of around EUR 500 per month. However, universities will not receive additional funding to accommodate this change. Therefore, UPCE prioritises quality over quantity in doctoral education, ensuring that financial resources serve as a motivating factor for attracting and retaining high-calibre candidates. Increased stipends are expected to attract more international applicants. Additionally, the growing number of English-taught programmes and international doctoral students enhances the internationalisation of doctoral studies, fostering joint seminars, conferences, and teaching, while also increasing Cotutelle agreements. UPCE has also implemented a joint doctoral school and mentoring programme.

5. Postdoctoral Career Support

UPCE has not introduced a formalised postdoctoral position system but has implemented various measures to support postdoctoral researchers. A reintegration system (Return Programme) has been established, focusing on returning junior researchers – postdocs – to UPCE. Furthermore, within research teams, postdocs and doctoral students are assigned specific roles, and their participation is mandatory in teams led by senior researchers. This approach is expected to increase the number of international researchers at UPCE, as postdoctoral researchers often choose to remain at the University beyond the duration of their initial fellowship. This is exemplified by the Centre for Ethics, where approximately half of the top researchers from Sweden, Finland, Italy, and Australia have signed employment contracts with UPCE following the conclusion of their projects.

6. Strengthening National and International Collaborations

The previous evaluation noted a relative lack of national and international cooperation across most faculties, with the exception of the Faculty of Chemical Technology. Since then, collaboration has been significantly expanded across multiple faculties. National and international partnerships have been successfully developed at the Faculty of Arts and Philosophy, the Faculty of Transport Engineering, the Faculty of Electrical Engineering and Informatics, and the Faculty of Restoration in both national and international contexts, while the Faculty of Health Studies and the Faculty of Economics and Administration have primarily focused on strengthening national collaborations. Additionally, the University has successfully secured more international projects, aligning with the

evaluation committee's recommendation to maximise institutional support for international grant applications at both the university-wide and faculty levels.

7. Individual Research Performance Evaluation

The panel recommended "using an internal research evaluation system for individual employees." UPCE has implemented this through annual evaluations of research teams and their members. Furthermore, faculty deans receive annual research plans for all academic staff from department heads, which include evaluations of previous years' plans. Based on these assessments, department heads determine the financial performance-based remuneration of each academic staff member for the upcoming year.

8. Open Science and Open Access Publications

The recommendation to "standardly publish research results in open access formats" has been fully implemented, and UPCE now operates an open science policy, as detailed in previous sections.

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 4

Document name	No. criteria	Location (link in HTML)
Organisational Structure of the UPCE	4.1	Organisational Structure Univerzita Pardubice
Organisational Chart of the UPCE	4.1	Organisational Chart Univerzita Pardubice (upce.cz)
Organisational Guidelines of the UPCE	4.1	smernice c. 6-2021 organizacni rad upce ve zneni dodatku c. 2 eng.pdf
Statute of the UPCE	4.1	Statutes of the University of Pardubice Univerzita Pardubice (upce.cz)
Annual Report 2023	4.1	https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M4
Organisational Structure of the UPCE II	4.1	pr. c. 1 organizacni struktura univerzity eng.pdf (upce.cz)
Strategic Plan 2021+	4.1, 4.3, 4.4	Strategic Plan 2021+ Univerzita Pardubice (upce.cz)
Rules of Procedure of the University of Pardubice International Scientific Council	4.1	https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M4
Internal Salary Regulations	4.2	https://www.upce.cz/en/internal-wage-regulations
Rules of the Quality Assurance and Evaluation System of Educational, Creative and Other Related Activities	4.2, 4.3	https://www.upce.cz/en/rules-of-the-quality-assurance-and-evaluation-system-of-educational-creative-and-other-related
System of Research Stimulation for Students-Young Researchers	4.2, 4.13	https://www.upce.cz/en/system-of-research-stimulation-for-students-young-researchers
Excellent R&D teams	4.2	Research Teams at Faculty of Transport Engineering University of Pardubice Excellent Scientific Teams University of Pardubice Research Teams University of Pardubice (https://fes.upce.cz/en/fes/research-teams) Petr Doležel Research Team University of Pardubice Tomáš Zálabský Research Team University of Pardubice Tomáš Brandejský Research Team University of Pardubice https://ff.upce.cz/en/ff/scientific-teams

Directive on Excellence Support	4.2	https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M4
Proof-of-Concept Projects	4.2	https://www.upce.cz/en/proof-of-concept-projects
Preparing to Come Guidebook	4.2, 4.13	https://www.upce.cz/en/preparing-to-come
UPCE Healthcare Club	4.2	https://fzs.upce.cz/fzs/upce-healthcare-club
UPCE Code of Good Research Practice	4.3	https://www.upce.cz/en/code-of-good-research-practice
Excellent Areas of Science and Research at UPCE 2024	4.3	Science and Research at UPCE 2024 University of Pardubice
Records of Results of Creative Activities of Employees and Students of the University of Pardubice in the PBD Internal Information System	4.3	https://www.upce.cz/sites/default/files/8-recording_of_results_in_pbd_information_system_sm_3-2019_eng.pdf
Internal Evaluation Board of the University of Pardubice	4.3	https://www.upce.cz/en/internal-evaluation-board-of-the-university-of-pardubice
Board of Trustees	4.3	Board of Directors University of Pardubice
Rules of Procedure of the Scientific Board of UPCE	4.3	Standing Orders for the Scientific Board University of Pardubice (upce.cz)
International Scientific Council	4.3	https://www.upce.cz/en/international-scientific-council
CEMNAT	4.3, 4.9	Centre of Materials and Nanotechnologies – CEMNAT University of Pardubice
Commercialisation Board	4.3	Commercialisation Board of the University of Pardubice University of Pardubice
UPCE Code of Ethics	4.3	https://www.upce.cz/en/ethical-code
SAFE UPCE	4.3	https://www.upce.cz/en/upce/safe-upce
Ombudsperson	4.3	UPCE Ombudsperson University of Pardubice
Whistleblowing	4.3	Whistleblowing University of Pardubice
Action Plan of the University of Pardubice	4.4, 4.6	https://www.upce.cz/sites/default/files/global/2023-11/8017/Action%20Plan_2023_2025_87450.pdf
Digital Library of the UPCE	4.4	https://dk.upce.cz/

Open Science at UPCE	4.4	https://knihovna.upce.cz/en/uk/open-science/os-upce
Centre for Technology and Knowledge Transfer	4.4	https://www.upce.cz/en/centre-for-technology-and-knowledge-transfer-0
Statutes of the Commercialisation Board of the University of Pardubice	4.4	https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M4
Protection of Personal Data	4.4	https://www.upce.cz/en/protection-of-personal-data
Protection of Intellectual Property Rights	4.4	https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M4
Human Resources Strategy for Researchers	4.6	Human Resources Strategy for Researchers (HRS4R) University of Pardubice
Open, Transparent, Merit-based Recruitment at UPCE	4.6	OTM-R Policy at the University of Pardubice University of Pardubice
University Doctoral School	4.6, 4.13	https://www.upce.cz/en/upce/doctoral-school
Mentoring	4.6, 4.13	https://www.upce.cz/en/mentoring
Rules of Selection Procedure	4.6	https://www.upce.cz/en/rules-of-selection-procedure
Rules for Associate Professorship and Professorship Qualification Procedures	4.6	Rules for Habilitation Procedure and Procedure for the Appointment of Professors University of Pardubice
Internal Salary Regulations	4.6	https://www.upce.cz/en/internal-wage-regulations
Employment Code of the University of Pardubice	4.6	https://www.upce.cz/sites/default/files/18-2007-prac-rad.pdf
System for Stimulating Research Activities of Students and Early-Career Researchers	4.6	https://zamestnanci.upce.cz/en/system/files/zamestnanci/jege3420/stimulation-system.pdf
Gender Equality Plan	4.7	Gender Equality Plan University of Pardubice
Counselling Centres	4.7	Counselling Centres University of Pardubice
Inappropriate Behaviour	4.7	Inappropriate Behaviour University of Pardubice
International Support Services	4.8	International Support Services University of Pardubice
<i>Moral Impossibility Project</i>	4.8	https://centreforethics.upce.cz/en/moral-impossibility
<i>Philosophy as Cultural Self-Knowledge Project</i>	4.8	https://centreforethics.upce.cz/en/philosophy-cultural-self-knowledge
Financial Management Rules	4.9	Rules of Management University of Pardubice

FChT Directive No. 3/2024	4.9	https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M4
Training and Research Centre in Transport	4.9	Educational and Research Centre in Transport University of Pardubice
Centre for Ethics	4.9, 4.12	Centre for ethics
ONCOLIPID Project	4.10, 4.12	https://www.upce.cz/en/scientist-from-the-university-of-pardubice-receives-prestigious-european-grant-for-research-on https://erc.europa.eu/sites/default/files/2023-03/erc-2022-adg-results-ls.pdf https://cordis.europa.eu/project/id/101095860
MADRAS Project	4.10	https://fcht.upce.cz/en/projekt/1034481 https://madras-project.eu/ https://cordis.europa.eu/project/id/862492
EGNSS Layer Project	4.10	High integrity EGNSS Layer for Multimodal Eco-friendly Transportation HELMET Project Fact sheet H2020 CORDIS European Commission
System Suitability Study for Train Project	4.10	ESA's NAVISP Programmes
Combating Self-Righteousness Project	4.10, 4.12	Self-righteousness Centre for ethics
Directives	4.11	https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M4
Lipidica Project	4.12	https://www.lipidica.com/ https://www.upce.cz/en/pancreatic-cancer-screening https://fcht.upce.cz/en/pancreatic-cancer-detection-at-early-stages
Collaboration in Nanotechnology Research and Engineering	4.12	Centre of Materials and Nanotechnologies – CEMNAT University of Pardubice
Podcast <i>Philosophy Voiced</i>	4.12	Philosophy voiced Centre for ethics
CfE Blog	4.12	BLOG Centre for ethics
IBAIA	4.12	https://ibaia.eu/
JIDEP	4.12	https://www.jidep.eu/
MADRAS	4.12	https://madras-project.eu/
SALAMANDER	4.12	https://www.salamander-eu.com/

PhD Study Programs	4.13	https://www.upce.cz/en/doctoral-studies ; Discover the right study programme Studuj UPCE
PhD Students CfE	4.13	Current students and Graduates Centre for ethics
PhD Program CfE	4.13	Study PhD with us! Centre for ethics
International Office	4.13	Contacts University of Pardubice
Doctoral Scholarship	4.13	Scholarship Regulations University of Pardubice
Student Grant Competition	4.13	Projects GAP University of Pardubice

MODULE 5 – STRATEGY AND POLICIES

5.1 Mission and vision of the evaluated institution in R&D&I

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 fields³⁹ (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:

As an internationally recognised centre of learning and a leading research institution, the University of Pardubice (UPCE) is **committed to integrating high-quality education with research, development, and innovation** in well-defined fields of study and research disciplines. UPCE operates in five of the six major research domains and across 18 of the 37 fields of education. It has been granted institutional accreditation in six of these fields: Transport, Economics, History, Chemistry, Informatics, and Healthcare. The **University's mission** is to foster the advancement of knowledge, promote critical thinking, and enhance quality of life and societal well-being through human creativity and intellectual potential. At the same time, it drives scientific progress, technological advancement, and human ingenuity through excellence in research, development, and innovation (R&D&I), ultimately contributing to societal prosperity and improved quality of life^[1].

The University of Pardubice has transformed from a predominantly technical institution (formerly the Institute of Chemical Technology in Pardubice) into a modern, multidisciplinary university. It comprises faculties spanning the natural sciences (FChT), technical disciplines (FChT, FEEL, FTE), humanities (FAP), healthcare (FHS), social sciences (FEA, FAP), and the arts (FR)^[1, 2]. This structure reflects the University's strong emphasis on basic research, while in technical disciplines, research is closely linked to applications and innovation. At the same time, the societal significance of the University's diverse academic fields must be underscored.

Through its facilities and a network of partner institutions in industry, applied research, and the public sector, UPCE maintains strong ties to the East Bohemia region, where it serves as a key research and educational institution, actively contributing to the region's social and cultural development. However, the University extends far beyond its regional role, engaging in national and international partnerships with universities, research organisations, and public authorities. In its core R&D areas, UPCE demonstrates significant international impact and academic relevance.

In its **Vision**^[1], the University of Pardubice strives to:

- be an internationally recognised centre of education, research, and creative activity within its defined fields of study and research disciplines,
- build on clearly defined areas of excellence in both education and research,
- establish itself as a multidisciplinary university,

³⁹ For so-called R&D&I capacities, see Definition of Terms in Methodology HEI2025+.

- be a modern, open, and socially responsible higher education institution with strong research and innovation potential, demonstrating both national and international competitiveness,
- foster diversity and excellence across the natural sciences, technical disciplines, economics, humanities, social sciences, healthcare, and the arts,
- fulfil the university's third role as a centre for lifelong learning, serving both professionals and the wider public, with a strong focus on addressing sustainability challenges,
- maintain internal cohesion, stability, and financial sustainability, fostering a unified institutional culture built on shared values and traditions,
- be a strong partner in the sustainable development of the Pardubice Region, the Czech Republic, and the global research and education landscape.

The percentage **distribution of capacities across the implemented R&D disciplines** is presented in Table 5.1 and Table 5.2. UPCE is active in five of the six major research domains, with R&D&I capacities reflecting not only full-time equivalents (FTE) but also the missions and visions of individual faculties.

The extent of faculty engagement in R&D activities at UPCE is best illustrated by their share of institutional funding under LCDRO and their revenue from research projects. Another key indicator is the internally analysed workload distribution of academic staff between R&D and teaching. It is evident that faculties with a greater focus on R&D also exhibit a higher level of academic staff involvement in research. These trends are fully consistent with the mission and vision of each faculty.

As of December 2024, no strategic changes to UPCE's R&D&I capacities have been planned for the current or forthcoming evaluation period. Consequently, Table 5.1 and Table 5.2 reflect identical R&D&I capacities. This stability stems from the strong interconnection between education and research, where any reduction in R&D&I capacities would inevitably necessitate a corresponding reduction in related educational activities. However, a comprehensive evaluation of research domains in relation to the quality of study programmes within these domains is scheduled for 2026. To facilitate this process, specific FORD fields have already been assigned to all implemented study programmes. Based on this classification, along with the consolidation of academic and research staff into larger research teams aligned with specific research disciplines, a review of UPCE's R&D&I capacities for the next period will be undertaken.

The most **productive R&D&I capacities** under **Module 1 and Module 2** include:

- 1.4 Chemical Sciences
- 2.5 Materials Engineering
- 6.1 History and Archaeology
- 6.3 Philosophy, Ethics and Religion
- 1.3 Physical Sciences and Astronomy
- 1.6 Biological Sciences
- 2.7 Environmental Engineering
- 2.1 Civil Engineering

Regarding the **concentration of excellent research teams**, key disciplines include:

- Computer Sciences, Information Science, Bioinformatics
- Organic Chemistry, Inorganic and Nuclear Chemistry, Physical Chemistry, Analytical Chemistry

- Materials Engineering, Coatings and Films
- History, Philosophy, Philosophy of Science and Technology, and Ethics

	FChT	FAP	FTE	FEEI	FR	FEA	FHS
Share of LCDRO Institutional Funding (2024) [%]	72.4	12.9	4.0	3.8	1.2	4.6	1.1
Share of R&D Project Funding (2020–2023) [%]	64.4	10.2	11.3	7.3	3.5	1.8	0.1
Academic Staff Workload in R&D [%]	63	45	35	34	29	24	14

Alignment with National and International Strategic Objectives and Measures in R&D

- **Competitiveness.** Through a diverse portfolio of high-quality study programmes, international collaboration, and internationally competitive R&D, UPCE contributes to the development of the European Higher Education Area (EHEA)^[3], in accordance with the Bologna Declaration of 1999^[4], and the European Research Area (ERA)^[5].
- **Code of Ethics.** UPCE implements the principles set out in *The European Charter for Researchers*^[6], in alignment with its *Code of Ethics* from 2007^[7] and its *Code of Good Research Practice for Scientific Research and Researchers* from 2017^[8].
- **European Research Area Roadmap.** Since 2015, UPCE – specifically its CEMNAT research centre – has been part of the *European Research Area Roadmap*^[9], currently covering the period 2023–2026^[10].
- **HR Award.** In the field of human resources development, UPCE committed itself in 2019 to European standards in human resource management and the *Human Resources Strategy for Researchers (HRS4R)*^[11, 12] as well as the *OTM-based (Open, Transparent and Merit) Recruitment of Researchers* framework^[13].
- **Open Science and Open Data.** The *Open Science System at UPCE*^[14] is defined in accordance with national legislative acts^[15], EU documents, and recommendations from international organisations. These include, in particular, *UNESCO's Recommendation on Open Science*^[16], adopted by the 41st General Conference of the United Nations Educational, Scientific and Cultural Organization (UNESCO)^[17], and *Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on Open Data and the Re-use of Public Sector Information*^[18].
- **Internationalisation and Support for Early-Career Researchers.** UPCE is progressively fulfilling the objectives of the *National Research, Development and Innovation Policy of the Czech Republic 2016–2020*^[15] through the expansion of international cooperation in R&D, with a strategic focus on selected regions in Europe and overseas, as well as the internationalisation of UPCE's internal communication and information systems. These initiatives foster an inclusive environment for international staff and students (as outlined in UPCE's *Action Plan for Internationalisation*). Special emphasis is placed on improving the effectiveness and quality of doctoral education^[19], mentoring programmes^[20], and supporting international mobility for students and academics^[21].
- **Application.** In R&D, UPCE has long-standing close collaborations with industry, business sectors, public administration, and other organisations. The University responds to social demands, societal needs, market requirements, and the objectives set out in the *National Priorities of Oriented Research, Experimental Development and Innovations*^[22],

the *Innovation Strategy of the Czech Republic 2019–2030*^[23], and the *National Research, Development and Innovation Policy of the Czech Republic 2021+*^[24]. UPCE conducts R&D activities in the context of the *National Research and Innovation Strategy for Smart Specialisation of the Czech Republic 2021–2027*^[25].

- **National Strategies.** UPCE implements and advances the objectives of Czech national strategic documents and their anticipated expectations for higher education institutions beyond 2021, as outlined in *The Strategy for the Education Policy of the Czech Republic up to 2030+*^[26].
- **Strategic Plan.** The *Strategic Plan of UPCE for the period from 2021* (hereinafter referred to as the *Strategic Plan of UPCE*)^[1] refines and further develops the direction of UPCE's educational, research, development, innovation, artistic, and other creative activities for the period up to 2030. The *Strategic Plan of UPCE* is primarily based on *The Strategic Plan of the Ministry for Higher Education for the Period from 2021*^[27] and *The Internationalisation of Higher Education Strategy for the Period from 2021*^[28].

During the evaluated period, the mission and vision of UPCE were implemented in accordance with its regularly updated Strategic Plan (last updated on 14 June 2023^[1]). In the field of R&D, several strategic decisions were made, significantly impacting the quality of research and development at UPCE:

- **Quality and Competitiveness.** One of UPCE's key priorities has been enhancing financial conditions to support the development of R&D. The University has strategically concentrated on well-defined R&D areas where it has consistently achieved internationally recognised and competitive results. While the 2016–2020 period focused on identifying leading scientific figures, the 2021–2024 period placed greater emphasis on fostering *excellent research teams* – comprising senior internationally recognised researchers, early-career researchers with international experience, and doctoral students. These teams have expanded, generated high-impact scientific outputs published in prestigious journals, secured highly competitive international grants, and actively contributed to the global scientific community.
- **Excellence.** UPCE has systematically fostered excellence in selected disciplines and provided methodological support for preparing research projects funded by international grant providers (at both the faculty and university level). These efforts have resulted in the acquisition of numerous prestigious international research projects, including one **ERC Advanced Grant** and two **ERC-CZ** projects.
- **Infrastructure.** The University has made substantial investments in research infrastructure and cutting-edge laboratory equipment, which is effectively utilised through a shared-use model.
- **Application.** UPCE has enhanced the innovation performance and competitiveness of its research by strengthening collaboration with industry and the application sector and by developing a robust framework for technology transfer. The advancement of excellence in selected basic research disciplines and their integration with applied research has been aligned with the **National R&D Policy**, **National R&D Priorities**, **RIS3 Strategy**, and the **Innovation Strategy of the Czech Republic 2019–2030**, as well as the key directions set out in the **Artificial Intelligence Strategy**.

- **Evaluation – Data Warehouses.** UPCE has improved and expanded the use of data warehouses to enable real-time assessment of R&D quality and provide feedback for research management.

Work Environment. The University has been awarded the **HR Award** and has introduced the **SAFE UPCE** framework to enhance the working environment.

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 research [%]
1. Natural Sciences	1.1 Mathematics	0.2	Applied research	39.3
	1.2 Computer and information sciences	4.0	Balanced basic and applied research	
	1.3 Physical sciences	4.0	Basic research	
	1.4 Chemical sciences	26.5	Basic research	
	1.5 Earth and related environmental sciences	0.5	Basic research	
	1.6 Biological sciences	4.0	Basic research	
	1.7 Other natural sciences	0.1	Balanced basic and applied research	
2. Engineering and Technology	2.1 Civil engineering	4.0	Balanced basic and applied research	31.6
	2.2 Electrical engineering, Electronic engineering, Information engineering	3.0	Balanced basic and applied research	
	2.3 Mechanical engineering	2.0	Balanced basic and applied research	
	2.4 Chemical engineering	1.5	Basic research	
	2.5 Materials engineering	16.0	Balanced basic and applied research	
	2.6 Medical engineering	0.1	Balanced basic and applied research	
	2.7 Environmental engineering	2.0	Balanced basic and applied research	
	2.8 Environmental biotechnology	0.5	Balanced basic and applied research	
	2.9 Industrial biotechnology	0.0	Zvolte položku.	
	2.10 Nanotechnology	1.0	Basic research	
	2.11 Other engineering and technologies	1.5	Balanced basic and applied research	
3. Medical and Health Sciences	3.1 Basic medicine	0.5	Basic research	3.0
	3.2 Clinical medicine	0.5	Balanced basic and applied research	
	3.3 Health sciences	2.0	Balanced basic and applied research	
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	0.1	Balanced basic and applied research	9.9
	5.2 Economics and Business	4.7	Basic research	
	5.3 Education	2.0	Balanced basic and applied research	
	5.4 Sociology	1.4	Balanced basic and applied research	
	5.5 Law		Zvolte položku.	
	5.6 Political science	1.0	Basic research	
	5.7 Social and economic geography	0.5	Basic research	
	5.8 Media and communications	0.1	Basic research	
	5.9 Other social sciences	0.1	Basic research	

6. Humanities and the Arts	6.1 History and Archaeology	6.0	Balanced basic and applied research	16.2
	6.2 Languages and Literature	2.0	Basic research	
	6.3 Philosophy, Ethics and Religion	6.0	Basic research	
	6.4 Arts (arts, history of arts, performing arts, music)	2.0	Applied research	
	6.5 Other Humanities and the Arts	0.2	Applied 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 research [%]
1. Natural Sciences	1.1 Mathematics	0.2	Applied research	39.3
	1.2 Computer and information sciences	4.0	Balanced basic and applied research	
	1.3 Physical sciences	4.0	Basic research	
	1.4 Chemical sciences	26.5	Basic research	
	1.5 Earth and related environmental sciences	0.5	Basic research	
	1.6 Biological sciences	4.0	Basic research	
	1.7 Other natural sciences	0.1	Balanced basic and applied research	
2. Engineering and Technology	2.1 Civil engineering	4.0	Balanced basic and applied research	31.6
	2.2 Electrical engineering, Electronic engineering, Information engineering	3.0	Balanced basic and applied research	
	2.3 Mechanical engineering	2.0	Balanced basic and applied research	
	2.4 Chemical engineering	1.5	Basic research	
	2.5 Materials engineering	16.0	Balanced basic and applied research	
	2.6 Medical engineering	0.1	Balanced basic and applied research	
	2.7 Environmental engineering	2.0	Balanced basic and applied research	
	2.8 Environmental biotechnology	0.5	Balanced basic and applied research	
	2.9 Industrial biotechnology	0.0	Zvolte položku.	
	2.10 Nanotechnology	1.0	Basic research	
	2.11 Other engineering and technologies	1.5	Balanced basic and applied research	
3. Medical and Health Sciences	3.1 Basic medicine	0.5	Basic research	3.0
	3.2 Clinical medicine	0.5	Balanced basic and applied research	
	3.3 Health sciences	2.0	Balanced basic and applied research	
4. Agricultural and veterinary sciences	4.1 Agriculture, Forestry, and Fisheries	0.0	Zvolte položku.	0.0
	4.2 Animal and Dairy science	0.0	Zvolte položku.	
	4.3 Veterinary science	0.0	Zvolte položku.	
	4.4 Other agricultural sciences	0.0	Zvolte položku.	
5. Social Sciences	5.1 Psychology and cognitive sciences	0.1	Balanced basic and applied research	9.9
	5.2 Economics and Business	4.7	Basic research	
	5.3 Education	2.0	Balanced basic and applied research	
	5.4 Sociology	1.4	Balanced basic and applied research	
	5.5 Law	0.0	Zvolte položku.	
	5.6 Political science	1.0	Basic research	
	5.7 Social and economic geography	0.5	Basic research	
	5.8 Media and communications	0.1	Basic research	
	5.9 Other social sciences	0.1	Basic research	

6. Humanities and the Arts	6.1 History and Archaeology	6.0	Balanced basic and applied research	16.2
	6.2 Languages and Literature	2.0	Basic research	
	6.3 Philosophy, Ethics and Religion	6.0	Basic research	
	6.4 Arts (arts, history of arts, performing arts, music)	2.0	Applied research	
	6.5 Other Humanities and the Arts	0.2	Applied 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
[1] Strategic plan of the UPCE for the period from 2021.	[27] Strategic Plan of the Ministry for Higher Education for the Period From 2021. [28] The Internationalisation of Higher Education Strategy for the period from 2021. [3] Work plan of the Bologna follow-up group 2024-2027. [4] The Bologna process: setting up the European higher education area. [26] Strategy for the Education Policy of the Czech Republic up to 2030+.
[21] Erasmus+ policies at the UPCE. [58] Preparing to Come Guidebook UPCE. [59] UPCE Healthcare Club.	[28] The Internationalisation of Higher Education Strategy for the period from 2021.
[7] Ethical Code of the UPCE. [8] Code of Good Research Practice of the UPCE.	[6] The European Charter for Researchers.
[35] Human Resources Strategy for Researchers (HRS4R) at the UPCE. [36] Action Plan of HR Strategy for Development of the UPCE 2023–2025. [37] Gender Equality Plan at the UPCE. [38] OTM-R Policy of Open and Transparent Recruitment of New Employees at the UPCE. [39] SAFE UPCE initiative. [40] Office of the Ombudsperson at the UPCE. [54] Employment Rules of the UPCE. [55] Internal Wage Regulations of the UPCE. [56] Rules of Selection Procedure of the UPCE.	[11] Towards a 2030 vision on the future of universities in the field of R&I in Europe. [12] HRS4R Human Resources Strategy for Researchers. [13] Open, Transparent and Merit-based Recruitment of Researchers.
[41] Whistleblower Protection at the University of Pardubice (Whistleblowing).	Directive (EU) 2019/1937 on the protection of persons who report breaches of EU law.
[14] Open Science System at the UPCE.	[16] UNESCO Recommendation on Open Science. [17] UNESCO Recommendation on Open Science (adopted by the General Conference of UNESCO at its 41st session, in November 2021). [18] Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information.
[19] University Doctoral School at the UPCE. [20] Mentoring programme at the UPCE.	[5] Strategic plan 2020-2024 – Research and Innovation.

[31] Concept of Support for Young Researchers at the UPCE. [32] System of research stimulation for Students-Young Researchers at the UPCE. [57] Rules for Habilitation Procedure and Procedure for the Appointment of Professors at the UPCE.	[15] National Research, Development and Innovation Policy of the Czech Republic 2021+. [24] National Research, Development and Innovation Policy of the Czech Republic 2021+.
[42] UPCE Sustainable Development Strategy 2025 – 2030.	[5] Strategic plan 2020-2024 – Research and Innovation. [22] National Priorities of Oriented Research, Experimental Development and Innovations. [24] National Research, Development and Innovation Policy of the Czech Republic 2021+.
[49a] Commercialisation Board of the UPCE. [49b] Statutes of the Commercialisation Board of the UPCE. [52] Protection of intellectual property rights at the UPCE. [53] Proof-of-concept sustainability plan at the UPCE.	[23] Innovation Strategy of the Czech Republic 2019–2030. [24] National Research, Development and Innovation Policy of the Czech Republic 2021+. [25] National Research and Innovation Strategy for Smart Specialisation of the Czech Republic 2021–2027.
[43] Rules of the Quality Assurance and Evaluation System of Educational, Creative and Other Related Activities of the UPCE.	[45] Methodology of Evaluation of Research Organisations in the Segment of Higher Education Institutions 2025+.
[50] Financial Management Rules of the UPCE. [51] Regulations for Financial and Non-Financial Investments made by the UPCE.	[27] Strategic Plan of the Ministry for Higher Education for the Period From 2021. [28] The Internationalisation of Higher Education Strategy for the period from 2021.

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:

The strategic objectives of UPCE for the period up to 2030 are outlined in its regularly updated *Strategic Plan*^[1].

In the **field of R&D**, UPCE has defined **ten key objectives** for the forthcoming period. These objectives are expected to make a significant contribution to both the quantity and quality of research outputs within Module 1 and Module 2, secure additional project funding, and strengthen the international competitiveness of R&D.

1. Development of Modern and Internationally Comparable Infrastructure. The first objective is to make substantial investments in state-of-the-art research equipment, technologies, and infrastructure, which will significantly enhance the quality, efficiency, and competitiveness of R&D at UPCE. At the same time, these investments are expected to increase interest in employment at UPCE and foster greater collaboration with the University. A key sub-objective includes the modernisation of research instrumentation and software tools, the construction of a new FHS building (scheduled for completion in 2026), and the expansion and upgrading of university infrastructure.

- a) The first sub-objective of UPCE is to increase major investments in the renewal and modernisation of research instrumentation and software tools compared to the current five-year period. A key priority is the acquisition of cutting-edge research instruments that will significantly enhance UPCE's international competitiveness. While institutional funding under LCDRO remains the primary financial source, an increasing number of large-scale projects and the activities of UPCE's three research centres are also playing a crucial role.
- b) The second sub-objective is a major investment in the construction of a new FHS building (2026), located near Pardubice Hospital. The proximity of these two institutions will foster substantial synergies and strengthen mutual collaboration. This investment is expected to significantly enhance the societal prestige of FHS within the region and strengthen the integration of educational activities and R&D between FHS and Pardubice Hospital.
- c) The third sub-objective is the modernisation of university infrastructure, including teaching spaces across almost all faculties, student facilities (including accommodation), and general university infrastructure (e.g. sports facilities, the library). These initiatives are primarily funded through development projects (e.g. **Operational Programme Johannes Amos Comenius (OP JAK) > CZK 300 million** and the **National Recovery Plan > CZK 30 million**) and programme-based funding from the **Ministry of Education, Youth and Sports (MEYS)**. The financial plan for the University's most demanding investment activities is part of the

Strategic Plan of UPCE^[1]. While these are not direct investments in R&D, improvements to infrastructure will increase the attractiveness of UPCE for students and future young employees, including those from abroad.

2. Strengthening Excellence – Excellent Research Teams. The second objective is to continue the targeted support for excellent research teams^{[29] [30a] [30b] [30c] [30d]}. At present, UPCE's internal regulations remain primarily focused on evaluating distinguished scientific figures as leaders of these teams. However, in the forthcoming period, the emphasis will shift towards assessing the overall contribution and quality of clearly defined excellent research teams as a whole, complemented by the structured integration of early-career and promising researchers. This targeted support will undoubtedly lead to an increase in project acquisition by the next generation of researchers, an improvement in research quality and international competitiveness, and the retention of young talent.

In addition to supporting excellent research teams, UPCE plans to intensify its support for research groups with strong industrial collaboration. This initiative aims to strengthen the readiness of research teams for knowledge and technology transfer. A key sub-objective is to establish clearly defined scientific teams across UPCE, ensuring a more structured research environment and preventing the fragmentation of R&D into small units, including individual researchers.

3. Development of High-Quality Research Disciplines – Targeted R&D Support. The third objective is to establish larger research teams within specific priority research disciplines, ensuring a sufficient concentration of distinguished scientific figures. These disciplines will enable UPCE to consistently achieve high-quality evaluations and serve as the University's flagship research areas. In the forthcoming period, it is essential for UPCE to clearly define all its research disciplines and their respective contributions.

These research disciplines may then selectively focus on various priorities:

- achieving international excellence,
- fostering high-quality collaboration with industry and facilitating knowledge and technology transfer,
- strengthening cooperation with the public sector,
- addressing societal relevance and demand.

4. Strengthening International and National Collaboration. The fourth objective is to establish new strategic partnerships that will facilitate the development of joint projects with national and international funding providers. Achieving this objective will create new opportunities for collaboration and funding. To this end, UPCE continues to prioritise support for selected excellent research teams engaged in significant national and international partnerships.

Furthermore, priority is given to funding student and staff mobility, including internships and exchange programmes, provided these initiatives deliver tangible benefits for UPCE. A mandatory international placement has also been incorporated into all doctoral study programmes. Over the past two years, all inactive and unpromising international partnerships have been discontinued.

This objective is particularly relevant given the unique research landscape in Pardubice, where, unlike in Prague and Brno, there are no other major research institutions – such as universities, research centres, or institutes of the Czech Academy of Sciences – with which UPCE could share personnel capacities and infrastructure. As a result, a significant proportion of R&D outputs are produced exclusively by UPCE researchers.

5. Strengthening Interfaculty and Interdisciplinary Collaboration. The fifth objective for the forthcoming period is to prioritise support for projects and study programmes that involve multiple

faculties. This objective aligns with the more efficient utilisation of existing capacities while also addressing the challenge posed by the broad scope of R&D activities undertaken by individual faculties. To achieve this goal, UPCE management has already begun prioritising interfaculty projects in cases where funding calls permit only a limited number of project proposals to be submitted on behalf of UPCE. Additionally, interfaculty workshops will be organised to facilitate the exchange of best practices and identify new opportunities for collaboration.

6. Supporting Young Doctoral Students, Postdoctoral Researchers, and Early-Career Staff. The sixth objective is to strengthen support for doctoral students, postdoctoral researchers, and early-career academic staff, particularly by increasing their involvement in research projects and excellent research teams receiving institutional support. To achieve this, UPCE is progressively developing a comprehensive system for supporting young researchers across all faculties^[31, 32], including increased scholarships for doctoral students. Additionally, the University is implementing a Doctoral School system^[20], mentoring programmes^[21], and evaluation mechanisms for early-career staff^[32]. Future plans also include the introduction of a return scheme to facilitate reintegration, for instance, following parental leave.

7. Implementing Regular Internal and External R&D Quality Evaluations. The seventh objective is to enhance the utilisation of the newly developed system for benchmarking the quality of R&D at individual faculties against other research institutions in the Czech Republic, using UPCE data warehouses. This system will serve as a valuable complement to the already established external evaluations conducted by the International Evaluation Panel (IEP) and the International Scientific Council of UPCE. Feedback from R&D quality assessments will form the foundation for further R&D support, particularly for excellent research teams and leading research disciplines.

8. Knowledge and Technology Transfer. The eighth objective is to expand the number of relevant R&D outputs that are effectively licensed or patented. To achieve this, a major restructuring of the Centre for Technology and Knowledge Transfer (CTKT) was carried out in 2023 and 2024, and several faculties established dedicated positions known as Ambassadors, responsible for leveraging the research potential of their respective faculties. In 2026, the University plans to introduce a *Methodology for Ambassadors* and a *Methodology for Supporting the Applied Activities of Students and Academics*. Additionally, regular events will be organised to raise awareness among staff and students about market needs, collaboration with the application sector, technology transfer opportunities, and intellectual property protection. In 2025, CTKT launched the next phase of financial support for commercialisation through proof-of-concept projects.

9. Ethical Standards and HR Award. The ninth objective is to uphold the highest ethical standards and maintain the HR Award in the coming years. This commitment will further reinforce UPCE's credibility and may attract international researchers with new research topics (see Module 5.1).

10. Research Centres. The tenth objective is to ensure the sustainability of the three existing research centres: Centre for Ethics^[33], Centre of Materials and Nanotechnologies (CEMNAT)^[10], and Educational and Research Centre in Transport^[34].

For the forthcoming period, UPCE has defined four key objectives in its collaboration with public administration and businesses:

- **Public Policy Development.** The first objective is to strengthen UPCE's involvement in public policy development. This includes providing expert analyses, research findings, and data to support informed decision-making and the implementation of effective and sustainable policies. To this end, UPCE management and faculty leadership are intensifying their collaboration not only with municipal, regional, and national government bodies but also

with institutions supporting entrepreneurship (e.g. P-PINK, the Regional Chamber of Commerce of the Pardubice Region).

- **Socially Significant Activities.** The second objective is to address regional and local challenges by implementing socially significant activities (see Module 3). Over the past three years, UPCE management has been actively involved in regional structures and consortia in fields relevant to the RIS3 Strategy. The University also participates in the work of the Regional Innovation Council, the Regional Standing Conference of the Pardubice Region, and the ITI Agglomeration Steering Committee. Additionally, the Head of CTKT is a member of the core working group of Transfera, a platform representing the interests of the knowledge transfer community in the Czech Republic.
- **Micro-Credentials.** The third objective is to implement micro-credentials for public administration and business sector employees. UPCE plans to introduce new flexible education formats tailored to the needs of these professionals. Micro-credentials will enable the rapid acquisition of specific skills and knowledge currently in demand in the labour market. These micro-credentials will complement the existing Lifelong Learning (LLL) and University of the Third Age (U3V) courses.
- **Public Engagement and Outreach.** The fourth objective is to intensify the popularisation of science and scientific knowledge and to raise public awareness of key societal topics. Each year, UPCE organises major public engagement events, including European Researchers' Night, the Science and Technology Fair, Science Point, and meetings with distinguished personalities.

For the forthcoming period, UPCE has set three key objectives in the area of human resources:

- **High-Quality Working Environment.** The first objective is to ensure stable and transparent working conditions, a high-quality work and social environment, and internationally comparable infrastructure and services. This is a fundamental prerequisite for employees' effective performance. To achieve this goal, UPCE plans to retain its HR Award^[35], implement the *UPCE HRS4R Action Plan*^[36], fulfil the *UPCE Gender Equality Action Plan*^[37], and adhere to the *UPCE OTM Policy*^[38].
- **Safe Working Environment.** The second objective is the full implementation of the SAFE UPCE framework^[39]. This includes updating the *UPCE Code of Ethics*^[7] in 2025, specifically in areas related to social safety. SAFE UPCE plays a crucial role in preventing and eliminating negative workplace phenomena, including the establishment of an ombudsperson position in 2024^[40]. Additionally, UPCE has introduced a *Whistleblowing Directive* to protect whistleblowers within the University^[41]. Given the specific nature of medical sciences, a Faculty of Health Studies (FHS) *Ethics Committee* has also been established.
- **Employee Evaluation.** The third objective is a fundamental innovation of the employee evaluation system, transitioning from the HAP system to HAP 2.0, which introduces a hierarchical approach to evaluation. HAP 2.0 will be implemented for all UPCE employees, rather than being limited to selected staff groups as is currently the case.

For the forthcoming period, UPCE has outlined four key objectives to strengthen its institutional resilience:

- **Sustainability Strategy.** The first objective is to implement the newly established *Sustainability Strategy of UPCE*^[42], which defines the fundamental principles of sustainable development within the University's processes and sets the direction for its development

until 2030. This strategy outlines UPCE's vision, mission, and sustainability goals, structured into six key pillars:

- (i) Governance of sustainable development at UPCE,
- (ii) Education,
- (iii) R&D and creative activities supporting sustainable development,
- (iv) The third role of the University, partnerships, and internationalisation,
- (v) Administration and operations at UPCE, and
- (vi) Socially safe environment.

To ensure the effective implementation of this strategy, UPCE will establish the *Centre for Sustainable Development* in 2025.

- **Artificial Intelligence.** The second objective is to implement artificial intelligence (AI) tools. In the forthcoming period, it will be crucial to develop a comprehensive strategy for the integration and use of AI at UPCE, ensuring that its deployment is secure, ethical, and efficient while enhancing research, teaching, and administrative processes. UPCE has acquired the *Copilot* module and has developed a structured collection of online learning materials and methodological guidelines within the *MS Teams* system (currently available only in Czech). Additional AI technologies are being introduced flexibly within research teams.
- **Flexibility.** The third objective is to enhance excellence in research and high-quality education that responds flexibly to societal needs.
- **IT Infrastructure.** The fourth objective is to further develop UPCE's IT infrastructure, IT support, and cybersecurity measures. It should be noted that UPCE is recognised as a key player in the digitalisation of higher education institutions and is among the leading actors in data management. Each year, UPCE organises the *Digital Transformation of Universities* conference (with the fourth edition scheduled for 2025). The University has already implemented two-factor authentication for access to internal systems and offers a fully electronic student enrolment process.

For the forthcoming period, UPCE has defined two primary objectives in the area of Open Science.

- **Open Science and Open Data.** The first objective is to update and approve the core documents governing Open Science. UPCE currently operates an *Open Science System*^[14], which needs to be expanded and transformed into a comprehensive *Open Science Strategy* and *Research Data Management Policy*.

Repositories. The second objective is to expand the existing institutional repository to include research data, assess readiness for a Trusted Digital Repository certification, and formally apply for certification.

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:

The strategic objectives, activities, and indicators are outlined in the *Strategic Plan of UPCE*^[1], which aims to enhance the quality of all activities at the University and its individual units.

At the university level, the implementation of the *Strategic Plan of UPCE* is focused on strengthening institutional support systems and university-wide strategic management by leveraging all available tools to enhance performance and achieve established objectives. This includes reinforcing central university units, implementing a comprehensive quality monitoring framework, and ensuring close collaboration with all faculties.

At the faculty level, the emphasis is primarily on enhancing the quality of education, research, and creative activities, as well as their internationalisation. While some strategic objectives may appear highly ambitious, they are fully aligned with both the current and future capacities of UPCE. All objectives outlined in the *Strategic Plan of UPCE* are continuously monitored through the University's data warehouses.

One of the most significant strategic decisions facilitating targeted and effective management at both the university and faculty levels has been the decision to grant full access to all analysed data stored in the University's data warehouses to all members of the management team. Previously, the evaluation system restricted individuals to tracking only their specific areas of responsibility (e.g. the Rector overseeing the entire University, Deans overseeing only their respective faculties, and Heads of Departments/Institutes overseeing only their own units). However, a strategic decision by the current UPCE leadership has led to a system-wide reform. Under the new data warehouse-based evaluation framework, full access is now granted to all members of the management team.

Beyond this comprehensive access, restricted access is provided to specific roles, such as programme supervisors, who are limited to viewing data related to their respective study programmes. The ability to monitor key performance indicators in real time serves as a critical tool for strategic management at both the university and faculty levels. In many cases, publicly available data also enables benchmarking against comparable universities and faculties in related disciplines (e.g. the quality of R&D outputs in Module 1 and Module 2).

1. Institutional and Strategic Instruments for Ensuring High-Quality R&D, Excellence, and Knowledge and Skills Transfer

- To strengthen strategic management, UPCE has established a robust set of R&D quality indicators, defined within the *Strategic Plan of UPCE*^[1]. All these indicators can be monitored in UPCE's data warehouses.
- The university-wide framework for R&D support measures and internal quality assurance tools is outlined in the internal regulation *Rules of the Quality Assurance and Evaluation System of Educational, Creative, and Other Related Activities*^[43]. Quality assurance and evaluation fall under the responsibility of the *Internal Evaluation Board of UPCE*^[44], which is a statutory body established for this purpose.
- The primary evaluation of R&D quality is aligned with the national research and development evaluation system, which is defined and operated in accordance with the *Methodology for the Evaluation of Research, Development, and Innovation and Completed Programmes*^[45]. Quality assessments of creative activities are conducted at the university, faculty, and department levels and also evaluate the excellence of established research teams. Internal evaluations complement and refine recommendations provided by external advisory bodies on R&D development (e.g. International Evaluation Panel 2025^[46], International Scientific Council^[47], Scientific Board^[48], and Commercialisation Board of UPCE^[49]), particularly in relation to similar institutions in the Czech Republic (using UPCE's data warehouses for benchmarking).
- The institutional instrument for coordinating, monitoring, administering, and approving or revising research, innovation, educational, development, and other related projects is managed by the project departments of Office for Research and Development and Office for Development and Project Activities. The project support system is defined in the directive *Coordination and Administration of Projects at UPCE*.
- The efficient use of institutional LCDRO funding is essential for the long-term development of UPCE. The University's strategy is to minimise the administrative burden on staff by eliminating the need to submit internal project proposals for the allocation of institutional LCDRO funding. Instead, the majority of institutional funding is allocated directly to faculties based on R&D quality evaluations, as defined in the budgetary rules for each calendar year. This approach provides faculties, as well as heads of departments/institutes and research team leaders, with the flexibility to utilise allocated financial resources efficiently and, where necessary, to support high-risk research projects. The financial management system is further described in the *Financial Management Rules of UPCE*^[50] and the *Regulations for Financial and Non-Financial Investments*^[51].
- The Centre for Technology and Knowledge Transfer (CTKT) serves as the primary unit responsible for supporting and facilitating the transfer of knowledge and technology into practice while actively identifying collaboration opportunities with businesses. As part of a strategic decision by UPCE management, CTKT has been established as an independent unit within the University's organisational structure – unlike at some other Czech universities, where such centres operate as separate legal entities. All key commercialisation processes are systematically defined in UPCE's internal regulations, including *Directive on the Protection of Intellectual Property Rights*^[52], *Notification of the Creation of an Industrial Property Object*, and *Methodological Guidelines for Invention Disclosure and the Establishment of Spin-Off Companies*. *Proof-of-concept sustainability plan*^[53] The *Proof-of-Concept Sustainability Plan*^[53] monitors individual projects and facilitates their transition to the product development phase, with a particular focus on the commercialisation of research outputs. To support intellectual property protection, UPCE

has established a licensing reserve, primarily used to finance industrial property protection and commercialisation activities. The allocation of funds from the licensing reserve is decided by the Commercialisation Board of UPCE, which serves as the Rector's advisory body on knowledge and technology transfer and commercialisation of research outputs.

- The *Open Science and Data Repository System* at UPCE is implemented in accordance with the *Open Science System at UPCE*^[14]. Additional key documents governing the development and support of Open Science at the University include the *Code of Good Research Practice of UPCE*^[8] and *Directive No. 3/2019 on the Recording of Research and Creative Activity Outputs of UPCE Staff and Students in the Personal Bibliographic Database*.

2. Institutional and Strategic Instruments for Ensuring Research Excellence at the Faculty Level

- **Excellence.** A key financial incentive tool consists of faculty-level internal support schemes aimed at excellent research teams and distinguished scientists. This system is systematically implemented across five faculties: FTE^[30a], FChT^[30b], FEA^[30c], FEEL^[30d], and FAP^[30e].
- **Horizon and ERC.** Special support is provided to applicants for prestigious ERC projects, who are eligible for financial contributions related to project preparation and benefit from faculty- and university-level project support.

3. Institutional and Strategic Instruments for Developing Human Potential and Creating High-Quality Working Conditions

- **HR Award and Gender Equality Plan.** Having met the requirements for obtaining the HR Excellence in Research Award (HR Award), UPCE successfully renewed this certification in 2023. As part of the implementation of these principles, all support processes aimed at enhancing R&D quality and fostering an innovative environment will be significantly strengthened. In 2020, UPCE adopted the *HRS4R Action Plan* for 2021–2025, which established goals and tasks related to balancing teaching and research workloads, work-life balance, and gender and non-discrimination policies. Following an evaluation of the action plan in 2023, an updated *HRS4R Action Plan* for 2023–2025 was developed^[38]. In the same year, UPCE also adopted the Gender Equality Plan^[39] and the OTM-R Policy for Open and Transparent Recruitment of New Employees at UPCE^[40], which includes measures to ensure equal access to professional development. In 2024, UPCE successfully retained its prestigious HR Award^[37].
- **Employment Regulations.** The employment framework at UPCE is systematically outlined in key documents, including the Employment Rules of UPCE^[54], the Internal Salary Regulations^[55], and the Selection Procedure Rules^[56].
- **System for Stimulating Young Researchers.** The System of Research Stimulation for Students-Young Researchers^[34] defines a unified support system for young and early-career domestic and international academic and research staff, including postdoctoral researchers and doctoral students. The system ensures that young researchers meet both formal and discipline-specific requirements for their involvement in education, research, and creative activities at UPCE. In addition, targeted research teams have been established to support young researchers, ensuring their integration into senior-led research teams.
- **Career Progression.** UPCE provides structured career development opportunities to enable academic staff to achieve the ranks of docent (associate professor) and professor. The rigorous academic promotion system follows the rules for habilitation proceedings and professorial appointment procedures^[57]. As a multidisciplinary university, UPCE has established university-

wide framework regulations for career advancement, while faculty-specific requirements are further defined at the faculty level to reflect disciplinary traditions.

4. Institutional and Strategic Instruments for Creating an Innovative Environment and Enhancing the International and R&D&I Competitiveness of University Research

- Incentive Measures for Supporting High-Quality R&D are outlined in Module 4.2. The primary motivation tool for ensuring high-quality R&D is the system of equitable financial remuneration for employees. The guidelines for staff involvement in research projects are systematically described in the *Methodology for Allocating Salary Costs in Multi-Source Funding*.
- To strengthen the internationalisation of UPCE and expand its global engagement, the University has developed a portfolio of support services for international staff, provided by the International Relations Office (IRO). The IRO assists international students and researchers prior to their arrival in the Czech Republic, offering guidance on visa procedures, health insurance, accommodation, and other essential preparations. Throughout their stay at UPCE, the IRO provides ongoing support in various practical matters, including residence permits, housing, banking, taxation, insurance, healthcare, integration into Czech society, and overcoming language barriers. Additionally, the *UPCE Guidebook* serves as a comprehensive resource, offering detailed guidance on living, working, and studying at the University, in the city, and in the surrounding region. This guidebook is publicly accessible on the University's website^[58, 59].

5. Institutional and Strategic Instruments for Strengthening Institutional Resilience

- The institutional tools and measures addressing sustainability have been incorporated into the *Sustainability Strategy of UPCE for the period 2024–2030*^[42], which was finalised at the end of 2024. In 2025, this strategy will be followed by the *Sustainable Development Action Plan of UPCE*, which will detail specific measures, responsibilities, target evaluations, implementation timelines, funding strategies, and transparency mechanisms for communicating results to stakeholders. Examples of current strategies and measures adopted by UPCE to promote sustainable development principles are outlined in Module 4.4.

6. Institutional and Strategic Instruments for Ensuring Compliance with Ethical Principles, Scientific Integrity, and Best Practices in R&D

- The **guidelines for granting sabbatical leave to academic staff** at UPCE are systematically described in the internal directive *Rules for Granting Sabbatical Leave*.
- The *Code of Good Research Practice at UPCE*^[8] aligns with the European Charter for Researchers and is formally established in the *Code of Ethics of UPCE*^[7].

In 2017, UPCE established a university-wide *Ethics Committee*, followed by the creation of the *UPCE Ethics Board* in 2019.

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
[1] Strategic plan of the UPCE for the period from 2021.	Strategic goals, activities, and indicators aimed at improving the quality of all activities (including R&D) of the university and its individual components. The indicators are used to measure R&D measures for the implementation of the research and development strategy. Measurement is carried out using defined quality indicators.	Implemented	2021
[7] Code of Ethics of the UPCE. [8] Code of Good Research Practice of the UPCE.	Research ethics management tools.	Implemented	2007 2017
[14] Open Science System at the UPCE.	Quality management tool for open science and data repositories.	Implemented	2023
[19] University Doctoral School at the UPCE.	Quality management tool for doctoral studies within the established university-wide framework of the university doctoral school.	Implemented	2023
[30a] Excellent Scientific Teams – FTE [30b] Excellent Scientific Teams – FChT [30c] Excellent Scientific Teams – FEA [30d] Excellent Scientific Teams – FEEI [30e] Excellent Scientific Teams – FAP	Quality and excellence management tools and support tools for excellent research teams.	Implemented	2020
[31] Concept of Support for Young Researchers at the UPCE.	Unified system of support for young and novice domestic and foreign academic and research staff, including postdoctoral staff and doctoral students (hereinafter "young researchers") to fulfil the formal and professional prerequisites for their involvement in educational, professional scientific and creative activities carried out at the UPCE.	Implemented	2021
[32] System of Research Stimulation for Students-Young Researchers at the UPCE.	The system of research stimulation for students and young academic and research workers represents individual elements in their mutual relationships and aims at ensuring quality-oriented development of the academic activities realised at the UPCE.	Implemented	2021
[36] Action Plan of HR Strategy for Development of the UPCE 2023–2025.	Implementation tool of Action Plan of HR Strategy for Development of the UPCE 2023–2025.	Implemented	2023
[37] Gender Equality Plan at the UPCE.	Implementation tool of Gender Equality Plan UPCE	Implemented	2022
[38] OTM-R Policy of Open and Transparent Recruitment of New Employees at the UPCE.	UPCE adopted the European standards of human resources development laid down in the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.	Implemented	2021
[39] SAFE UPCE initiative.	Implementation tool to develop a friendly and inspiring environment for its employees and students.	Implemented	2024

[40] Office of the Ombudsperson at the UPCE.	Implementation tool for established office of the Ombudsperson established to further enhance social safety and offer new ways to deal with issues involving misconduct or inappropriate behaviour.	Implemented	2024
[41] Whistleblower Protection at the University of Pardubice (Whistleblowing).	Tools for addressing whistleblowing issues.	Implemented	2024
[42] UPCE Sustainable Development Strategy 2025 – 2030.	Implementation tool for The Sustainable Development Strategy of the UPCE that defines the basic concept of incorporating sustainable development principles into the University's processes.	Implemented	2024
[43] Rules of the Quality Assurance and Evaluation System of Educational, Creative and Other Related Activities of the UPCE.	Tool for implementing incentive measures to support R&D and tools to support the internal evaluation system.	Implemented	2017
[50] The Financial Management Rules of the UPCE. [51] Regulations for Financial and Non-Financial Investments made by the UPCE.	Tool for the effective use of institutional funds for long-term conceptual development of research organisations (DKRVO).	Implemented	2024 2014
[52] Protection of Intellectual Property Rights at the UPCE.	Implementation tool to protect of intellectual property at the UPCE.	Implemented	2014
[53] Proof-of-concept Sustainability Plan at the UPCE.	Implementation tool to proof-of-concept activities.	Implemented	2024
[57] Rules for Associate Professorship and Professorship Qualification Procedures	Implementation tool for the career growth of academic staff.	Implemented	2024

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:

Based on the previous evaluation, the International Evaluation Panel (IEP) provided a set of recommendations aimed at enhancing the University's research excellence, international collaboration, and institutional development. The following section outlines the key measures implemented by UPCE in response to these recommendations.

1. Strengthening Innovation Performance and Research Competitiveness through Increased Collaboration with Industry

The University of Pardubice (UPCE) has significantly transformed the Centre for Technology and Knowledge Transfer (CTKT), established four Innovation Ambassador positions, organised matchmaking events (e.g., TechnologyDay), and implemented cross-sector collaboration projects. This robust system effectively facilitates the transfer of innovative technologies and meets the research needs of industry and other application sectors. These measures have yielded tangible results across all forms of university technology transfer, including:

- The establishment of the spin-off company Lipidica.
- Licensing agreements with domestic entities (e.g., Czech Railways, Principal Engineering) and international partners (Borchers GmbH).

Paid transfers of intellectual property rights (e.g., ELDIS).

2. Enhancing Research Quality through International Collaboration

UPCE has increased selective support for excellent research teams, created conditions for hiring international researchers, and focused on securing international projects that integrate UPCE into international university consortia:

- WIDEn performance in research and innovation capacity and competence Across EU, a consortium involving institutions from the Czech Republic, North Macedonia, Ukraine, Finland, and Sweden.
- INnoVation and ENTrepreneurship in HEIs, an international network of regional innovation centres aimed at attracting and retaining talent through advanced technology education and academic spin-offs and start-ups.

Support for outstanding researchers has resulted in:

- The acquisition of ERC projects (ERC Advanced Grant and two ERC-CZ projects).
- A higher number of Horizon Europe projects.
- Submission of three new ERC project proposals in 2024, to be evaluated in 2025.

The formation of research teams with a high proportion of international staff, postdoctoral researchers, and students, particularly in the Centre for Ethics, CEMNAT, CERT, and various excellent research teams (see Module 4).

3. Targeted and Systematic Support for Excellent Research Teams and Researchers

UPCE has defined excellent research personalities in fundamental research and introduced faculty-level rules for special support of excellent research teams. For details, see Module 4.

4. Development of Joint Study Programmes and Postdoctoral Systems to Attract International Graduates

UPCE leadership has prioritised project proposals involving collaboration between at least two faculties, leading to:

- The project Multi-sector and Interdisciplinary Cooperation in Research and Development of Communication, Information, and Detection Technologies for Control and Signalling Systems (FEEI and FTE, CZK 77,125,000).
- The preparation of a joint doctoral study programme in Health Sciences (FHS and FChT), currently undergoing accreditation.

The development of a new study programme, Digital Humanities (FAP and FEEI).

5. Increasing International Mobility for Staff and Students

International mobility numbers were significantly impacted by the pandemic but have now returned to pre-pandemic levels for Erasmus and staff exchanges. While joint degree programmes have so far been created on an individual basis (Cotutelle agreements), they have achieved an almost 100% success rate, with selected students successfully completing their PhD studies. Long-term research stays remain a key component of established partnerships, such as the collaboration with NIMS (see Module 3). For further details, see Module 4.

6. Focus on Internationally Recognised Scientists, Teams, and Institutions/Disciplines

Special support has been allocated to outstanding research personalities. The number of internationally recognised researchers has increased, particularly in newly established centres, such as the Centre for Ethics, where researchers like Doc. Forsberg and Prof. Lippitt have significantly contributed. Further details are available in Module 4.

7. Regular Evaluation of Research Teams and Institutions

Research teams and individual researchers are evaluated annually, with performance-based financial rewards allocated accordingly. For a comprehensive overview, see Module 4.

8. Attaining the HR Award and Strengthening HR Development

UPCE has pursued the HR Award as recommended. In 2019, it committed to European HR management standards through the *Human Resources Strategy for Researchers (HRS4R)*^[11, 12] and *OTM-based (Open, Transparent, and Merit) Recruitment of Researchers*^[13]. Additionally, the University adopted the *Gender Equality Plan UPCE*^[39] and the *OTM-R Policy for Open and Transparent Recruitment at UPCE*^[40]. These measures ensure equal access to professional development. In 2024, UPCE successfully renewed the prestigious *HR Award*^[37]. See Module 4 for details.

9. Enhancing the Use of Software Tools and Information Systems for Evaluating Academic and Research Activities at the Managerial Level of Individual Departments and Units to Support and Motivate Staff

UPCE has improved and expanded the use of data warehouses that enable real-time assessment of R&D quality and provide feedback for managing R&D activities. These data warehouses also serve

as a key resource for the annual evaluation of the implementation of UPCE's *Strategic Plan* and the annual assessment of employees.

One of the most significant strategic decisions to enhance targeted and strategic management at the university and faculty levels has been the decision to grant all management members access to all analysed data stored in the data warehouses. Previously, the evaluation system only allowed individuals to monitor the specific unit they managed (e.g., the Rector could oversee the University as a whole, a Dean could only view data for their faculty, and a Head of Department/Institute could access information solely for their respective unit).

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 5

Document name	No. criteria	Location (link in HTML)
[1] Strategic plan of the UPCE for the period from 2021.	5.1, 5.2, 5.3	Strategic plan for the period from 2021
[2] Statutes of the UPCE.	5.1	Statutes of the University of Pardubice University of Pardubice
[3] Work plan of the Bologna follow-up group 2024-2027.	5.1	European Higher Education Area and Bologna Process.
[4] The Bologna process: setting up the European higher education area.	5.1	The Bologna process: setting up the European higher education area EUR-Lex
[5] Strategic plan 2020-2024 – Research and Innovation.	5.1	Strategy on research and innovation – European Commission
[6] The European Charter for Researchers.	5.1	European Charter for Researchers EURAXESS
[7] Code of Ethics of the UPCE.	5.1, 5.2, 5.3	Ethical Code University of Pardubice
[8] Code of Good Research Practice of the UPCE.	5.1, 5.3	Code of Good Research Practice University of Pardubice
[9] European Strategy Forum on Research Infrastructures.	5.1	www.esfri.eu
[10] Centre of Materials and Nanotechnologies (CEMNAT), UPCE.	5.1, 5.2	Centre of Materials and Nanotechnologies – CEMNAT University of Pardubice
[11] Towards a 2030 vision on the future of universities in the field of R&I in Europe.	5.1	HR Excellence in Research Award (HR Award)
[12] HRS4R Human Resources Strategy for Researchers.	5.1	HRS4R Technical Guidelines for Institutions.pdf
[13] Open, Transparent and Merit-based Recruitment of Researchers.	5.1	Microsoft Word – OTM-R-finaldoc.docx
[14] Open Science System at the UPCE.	5.1, 5.2, 5.3	open_science_upce_eng_196365.pdf
[15] National Research, Development and Innovation Policy of the Czech Republic 2021+.	5.1	National Research, Development and Innovation Policy of the Czech Republic 2021+ Research and Development in the Czech Republic
[16] UNESCO Recommendation on Open Science.	5.1	Open science UNESCO
[17] UNESCO Recommendation on Open Science (adopted by the General Conference of UNESCO at its 41st session, in November 2021).	5.1	UNESCO Recommendation on Open Science – UNESCO Digital Library
[18] Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information.	5.1	Directive – 2019/1024 – EN – psi directive – EUR-Lex

[19] University Doctoral School at the UPCE.	5.1	University Doctoral School University of Pardubice
[20] Mentoring Programme at the UPCE.	5.1, 5.2	Mentoring University of Pardubice prirucka-upce EN.indd
[21] Erasmus+ policies at the UPCE.	5.1, 5.2	Erasmus+ policies University of Pardubice erasmus_charter_2021-2027_163524.pdf
[22] National Priorities of Oriented Research, Experimental Development and Innovations.	5.1	National priorities of oriented research Research and Development in the Czech Republic
[23] Innovation Strategy of the Czech Republic 2019–2030.	5.1	Innovation Strategy of the Czech Republic 2019 – 2030 Research and Development in the Czech Republic
[24] National Research, Development and Innovation Policy of the Czech Republic 2021+.	5.1	National-Research-Development-and-Innovation-Policy-of-the-CR-2021.pdf
[25] National Research and Innovation Strategy for Smart Specialisation of the Czech Republic 2021–2027.	5.1	National Research and Innovation Strategy for Smart Specialisation of the Czech Republic 2021–2027 RIS3
[26] Strategy for the Education Policy of the Czech Republic up to 2030+.	5.1	brozura_S2030_en_fin_online.pdf
[27] Strategic Plan of the Ministry for Higher Education for the Period From 2021.	5.1	strategic_plan_2021 .pdf
[28] The Internationalisation of Higher Education Strategy for the period from 2021.	5.1	internationalisation_strategy_2021 .pdf
[29] Excellent Scientific Teams at the UPCE.	5.2	Science and Research at UPCE 2024 University of Pardubice https://unipardubice.sharepoint.com/sites/MEP2025/Documents/M5
[30a] Excellent Scientific Teams – FTE.	5.2, 5.3	Research teams of Faculty of Transport Engineering University of Pardubice
[30b] Excellent Scientific Teams – FChT.	5.2, 5.3	Excellent Scientific Teams University of Pardubice
[30c] Excellent Scientific Teams – FEA.	5.2, 5.3	Excellent research teams University of Pardubice
[30d] Excellent Scientific Teams – FEEI.	5.2, 5.3	Petr Doležel Research Team University of Pardubice Tomáš Zálabský Research Team University of Pardubice Tomas Brandejsky Research Team University of Pardubice
[30e] Excellent Scientific Teams – FAP.	5.2, 5.3	https://ff.upce.cz/en/ff/scientific-teams

[31] Concept of Support for Young Researchers at the UPCE.	5.2	Concept of Support for Young Researchers University of Pardubice
[32] System of research stimulation for Students-Young Researchers at the UPCE.	5.2	System of Research Stimulation for Students and Young Academic and Researchers University of Pardubice
[33] Centre for Ethics, UPCE.	5.2	Centre for Ethics University of Pardubice
[34] Educational and Research Centre in Transport, UPCE.	5.2, 5.3	Educational and Research Centre in Transport University of Pardubice
[35] Human Resources Strategy for Researchers (HRS4R) at the UPCE.	5.2	Human Resources Strategy for Researchers (HRS4R) University of Pardubice
[36] Action Plan of HR Strategy for Development of the UPCE 2023–2025.	5.2	Microsoft Word – Action plan 2023-2025.docx
[37] Gender Equality Plan at the UPCE.	5.2, 5.3	Gender Equality Plan University of Pardubice
[38] OTM-R Policy of Open and Transparent Recruitment of New Employees at the UPCE.	5.2, 5.3	otm-r_na_univerzite_pardubice_en_197200.pdf
[39] SAFE UPCE initiative.	5.2, 5.3	SAFE UPCE University of Pardubice
[40] Office of the Ombudsperson at the UPCE.	5.2, 5.3	UPCE Ombudsperson University of Pardubice
[41] Whistleblower Protection at the University of Pardubice (Whistleblowing).	5.2	Whistleblower Protection at the University of Pardubice (Whistleblowing) University of Pardubice
[42] UPCE Sustainable Development Strategy 2025 – 2030.	5.2, 5.3	
[43] Rules of the Quality Assurance and Evaluation System of Educational, Creative and Other Related Activities of the UPCE.	5.3	Rules of the Quality Assurance and Evaluation System of Educational, Creative and Other Related Activities University of Pardubice
[44] Internal Evaluation Board of the UPCE.	5.3	Internal Evaluation Board of the UPCE
[45] Methodology of Evaluation of Research Organisations in the Segment of Higher Education Institutions 2025+.	5.3	Documentation for Evaluation of Research Organisations in the Segment of Higher Education Institutions in 2025, MŠMT ČR
[46a] International Evaluation Panel 2025 of the UPCE.	5.3	International Evaluation Panel 2025 University of Pardubice
[46b] Standing Orders of the Internal Evaluation Board of the UPCE.	5.3	Standing Orders of the Internal Evaluation Board University of Pardubice

[47a] International Scientific Council of the UPCE.	5.3	International Scientific Council University of Pardubice
[47b] Rules of Procedure of the University of Pardubice International Scientific Council.	5.3	Rules of Procedure of the University of Pardubice International Scientific Council University of Pardubice
[48a] Scientific Council of the UPCE.	5.3	Scientific Council University of Pardubice
[48b] Rules of Procedure of the Scientific Board of the UPCE.	5.3	Standing Orders for the Scientific Board University of Pardubice
[49a] Commercialisation Board of the UPCE.	5.3	Commercialisation Board of the University of Pardubice University of Pardubice
[49b] Statutes of the Commercialisation Board of the UPCE.	5.3	Statutes of the Commercialisation Board of the University of Pardubice University of Pardubice
[50] Financial Management Rules of the UPCE.	5.3	Rules of Management University of Pardubice
[51] Regulations for Financial and Non-Financial Investments made by the UPCE.	5.3	Regulations for Financial and Non-Financial Investments University of Pardubice
[52] Protection of Intellectual Property Rights at the UPCE.	5.3	Protection of intellectual property rights University of Pardubice
[53] Proof-of-concept Sustainability Plan at the UPCE.	5.3	Proof-of-concept sustainability plan (SIGMA Programme – Sub-objective No. 1: Support for "Proof of Concept" activities in research organisations) University of Pardubice
[54] Employment Rules of the UPCE.	5.3	https://www.upce.cz/sites/default/files/18-2007-prac-rad.pdf
[55] Internal Wage Regulations of the UPCE.	5.3	Internal Wage Regulations University of Pardubice
[56] Rules of Selection Procedure of the UPCE.	5.3	Rules of Selection Procedure University of Pardubice
[57] Rules for Associate Professorship and Professorship Qualification Procedures at the UPCE.	5.3	Rules for Habilitation Procedure and Procedure for the Appointment of Professors University of Pardubice
[58] Preparing to Come Guidebook UPCE.	5.3	Preparing to come University of Pardubice
[59] UPCE Healthcare Club.	5.3	UPCE Healthcare Club University of Pardubice

LIST OF ABBREVIATIONS

University and Faculties

- **UPCE** – University of Pardubice
- **FChT** – Faculty of Chemical Technology
- **FEA** – Faculty of Economics and Administration
- **FAP** – Faculty of Arts and Philosophy
- **FTE** – Faculty of Transport Engineering
- **FEEL** – Faculty of Electrical Engineering and Informatics
- **FR** – Faculty of Restoration
- **FHS** – Faculty of Health Studies

University Centres and Institutions

- **CTKT** – Centre for Technology and Knowledge Transfer
- **VVCD** – Centre for Education and Research in Transport
- **CePeZ** – Centre for Health Care
- **SFÉRA** – Centre for Informal and Lifelong Education in Pardubice

Research and Development (R&D&I)

- **LCDRO** – Long-Term Conceptual Development of a Research Organisation
- **R&D** – Research and Development
- **R&D&I** – Research, Development and Innovation
- **ERC** – European Research Council
- **ERC CZ** – European Research Council CZ Programme
- **GAČR** – Czech Science Foundation
- **TAČR** – Technology Agency of the Czech Republic
- **AV ČR** – Czech Academy of Sciences
- **MEYS** – Ministry of Education, Youth and Sports (Czech Republic)
- **RVVI** – Research, Development and Innovation Council
- **HR Award** – Human Resources Excellence in Research Award
- **HR Strategy for Researchers (HRS4R)** – European HR Development Strategy
- **OTM-R** – Open, Transparent, and Merit-Based Recruitment

Operational and Funding Programmes

- **OP VVV** – Operational Programme Research, Development and Education
- **OP JAK** – Operational Programme Jan Amos Komenský
- **OP TAK** – Operational Programme Technology and Application for Competitiveness
- **OP PIK** – Operational Programme Enterprise and Innovation for Competitiveness
- **INTER-ACTION** – International Cooperation in R&D Programme
- **INTER-INFORM** – International Information Exchange Programme
- **INTER-EUREKA** – International Applied Research Programme
- **ERA** – European Research Area
- **ESRI** – Economic and Social Research Institute
- **COST** – European Cooperation in Science and Technology
- **RIS3** – Regional Innovation Strategy

National Research Programmes

- **ÉTA** – Applied Social Sciences and Humanities Research Programme
- **ZÉTA** – Applied Research Support Programme for Young Researchers
- **SIGMA** – Programme for Applied Research, Experimental Development, and Innovation
- **EPSILON** – Support Programme for Applied Research and Development
- **GAMA 2** – Technology Transfer and Commercialisation Support Programme
- **THÉTA** – Programme for Energy and Environmental Research
- **TREND** – Industrial R&D Support Programme
- **TRIO** – Technology and Innovation Research Programme
- **M-ERA.NET 3** – European Programme for Materials Research
- **NAKI II / III** – Applied Research and Development of National and Cultural Identity
- **BV III/1-VS** – Security Research Programme of the Czech Republic (2015–2020)
- **OPSEC** – Security Research Programme of the Czech Republic (2023–2029)
- **IMPAKT 1** – Strategic Support for Security Research Development (2019–2025)
- **ZEMĚ** – Applied Research Programme of the Ministry of Agriculture (2017–2025)

Academic and Doctoral Programmes

- **DSP** – Doctoral Study Programme
- **SGS** – Student Grant Competition
- **IGA** – Internal Grant Agency
- **LLL** – Lifelong Learning

Technology, Science, and Engineering

- **GNSS** – Global Navigation Satellite System
- **GSM-R** – Global System for Mobile Communications – Railway
- **EGNSS** – European Global Navigation Satellite System
- **EGNOS** – European Geostationary Navigation Overlay Service
- **ERTMS** – European Rail Traffic Management System
- **ETCS** – European Train Control System
- **FRMCS** – Future Railway Mobile Communication System
- **HELMET** – High Integrity EGNSS Layer for Multimodal ECO-Friendly Transportation
- **IEEE** – Institute of Electrical and Electronics Engineers
- **IoT** – Internet of Things
- **LDS** – Location Determination System
- **NTSP** – New Trends in Signal Processing
- **RTCM** – Radio Technical Commission for Maritime Services
- **SBAS** – Satellite-Based Augmentation System
- **SDR** – Software-Defined Radio
- **TRL** – Technology Readiness Level

Academic Publishing and Metrics

- **AIS** – Article Influence Score
- **IF** – Impact Factor
- **ORCID** – Open Researcher and Contributor ID
- **RIV** – Information Register of R&D Results
- **SI** – Special Issue

Education and Mobility Programmes

- **BIP** – Blended Intensive Programme
- **EORNA** – European Operating Room Nurses Association
- **U3V** – University of the Third Age

Organisations and Institutions

- **ČNB** – Czech National Bank
- **EU** – European Union
- **OECD** – Organisation for Economic Co-operation and Development
- **VŠCHT** – University of Chemistry and Technology, Prague
- **VUT** – Brno University of Technology
- **CESNET** – Czech Education and Scientific Network
- **DBU** – Deutsche Bundesstiftung Umwelt / German Federal Environmental Foundation
- **EEA** – European Economic Area
- **IPR** – Institut de Physique de Rennes
- **ISCR** – Institut des Sciences Chimiques de Rennes
- **NIMS** – National Institute for Materials Science (Japan)
- **AIST** – National Institute of Advanced Industrial Science and Technology (Japan)

Specialised Research Areas

- **GPR** – Ground-Penetrating Radar
- **PCR** – Polymerase Chain Reaction
- **WORM** – Write Once, Read Many (non-volatile memory technology)
- **ZLD** – Zero Liquid Discharge (wastewater treatment technology)
- **M-FOR-3D** – Materials with Multi-Photon Absorption for 3D Printing and 3D Imaging
- **ORGBAT** – Organic-Based Batteries for Traditional and Renewable Energy Storage
- **SALAMANDER** – Smart Sensors and Self-Healing Functionalities Embedded for Battery Longevity With Manufacturability and Economical Recyclability

Social Sciences and Humanities

- **OSPOD** – Authority for Social and Legal Protection of Children (Child Welfare Authority)
- **ÖMV** – Austrian Montessori Association
- **OZSW** – Dutch Research School of Philosophy

