REGISTRATION FORM FOR CZECH SCIENTIFIC INSTITUTION

1. Research institution data (name and address):

Centrum dopravního výzkumu, v. v. i. (Transport Research Centre in English)
Líšeňská 33a
636 00 Brno
Czech Republic
https://www.cdv.cz/

2. Type of research institution: Public research institution (veřejná výzkumná instituce)

3. Head of the institution: Ing. Jindřich Frič, Ph.D. – Director

4. Contact information of designated person(s) for applicants:

Rudolf Cholava – Research Coordinator for International Projects
E: rudolf.cholava@cdv.cz, T: +420 541 641 717
Centrum dopravního výzkumu, v. v. i.
Líšeňská 33a, 636 00 Brno, Czech Republic

Marek Vanžura – Head of Department of Autonomous Driving
E: marek.vanzura@cdv.cz, T: +420 541 641 367
Centrum dopravního výzkumu, v. v. i.
Líšeňská 33a, 636 00 Brno, Czech Republic

5. Research discipline in which the strong international position of the institution ensures establishing a Dioscuri Centre:

Natural Sciences and Technology: *Computer science and informatics* - informatics and information systems, computer science, scientific computing, intelligent systems

6. Description of important research achievements from the selected discipline from the last 5 years including a list of the most important publications, patents, or other results:

The Autonomous Driving Department has been established less than 4 years ago but has already achieved many significant results. The department is also leading or participating in several national and international projects.

International publications:

Krehlik, S., Novak, M., Vyroubalova, J. (2022) From automata to multiautomata via theory of hypercompositional structures. *Mathematics*, vol. 10, no. 1, p. 1-16. ISSN 2227-7390.

Vanzura, M. (2021) What Is It Like to Be a Drone Operator? Or, Remotely Extended Minds in War. In: Clowes R.W., Gärtner K., Hipólito I. (eds) *The Mind-Technology Problem*. Studies in Brain and Mind, vol 18. Springer, Cham. https://doi.org/10.1007/978-3-030-72644-7_10.

Linkov, V., Vanzura, M. (2021) Situation Awareness Measurement in Remotely Controlled Cars. *Frontiers in Psychology*, 20 April 2021. https://doi.org/10.3389/fpsyg.2021.592930.

Krehlik, S. (2020) n-Ary Cartesian Composition of Multiautomata with Internal Link for Autonomous Control of Lane Shifting. *Mathematics*, vol. 8, no. 5, p. 1-18. ISSN 2227-7390.

Other results:

Autonomous Vehicles Accidents database: AVCrashes.net (developed the very first public database and interactive map of autonomous vehicles crashes).

7. List of no more than 3 important research projects in the selected discipline awarded in national and international calls to the institution in the last 5 years:

Project name: ***Situational awareness in drivers of teleoperated vehicles***

Identification number: CK01000121

Duration: 02/2020-12/2022

PI: Marek Vanzura

Source of funding: Technology Agency of the Czech Republic (TACR)

Funding: 7,1 million CZK (approx. 280 000 EUR)

Description: The research project investigates remote driving also known as teleoperation from the perspective of road safety. The objective is to determine key human factors that influence the performance of a remote driver and based on these findings to propose optimal design of a remote control station.

Project name: ***High-definition maps as a tool for increasing resiliency and safety of (automated) vehicles***

Identification number: CK01000122

Duration: 03/2020-12/2022

PI: Marek Vanzura

Source of funding: Technology Agency of the Czech Republic (TACR)

Funding: 3,2 million CZK (approx. 125 000 EUR)

Description: The research project investigates HD maps as a type of a vehicle sensor and their role in supporting automated vehicles. The objective is to identify fundamental parts of HD maps that are vital for safe deployment of automated and autonomous vehicles.

Project name: ***SHared automation Operating models for Worldwide adoption***

Identification number: 875530

Duration: 01/2020-12/2023

PI at CDV: Marek Vanzura (coordinated and led by UITP)

Source of funding: European Commission, Horizon 2020

Funding: 283 750 EUR

Description: The research and innovation project investigates the potential of today's autonomous vehicles in urban environments with emphasis on their integration into public transport networks. The objective of this project is to deploy autonomous shuttles in the Czech Republic for the very first time, to develop operating and business models for their successful

integration into public transport network, and to understand attitudes of the public towards autonomous vehicles.

8. Description of the available laboratory and office space for a Dioscuri Centre:

The institution owns several modern buildings equipped with spacious offices which allow for undisturbed and focused work of our researchers. There are also several laboratories, beyond the laboratory dedicated to the research of automated vehicles, we operate also laboratories specialized in road construction materials and in environmental impacts of road transport.

9. List of the available research equipment for a Dioscuri Centre:

- 3 DOF Vehicle simulator: this research equipment is used for remote driving research because it allows remote control of vehicles, it also supports simulation software such as AVSimulation SCANer, it can be used together with eye tracking devices.
- Tesla Model 3 Enhanced Autopilot: this research equipment is used for on-road and closed track studies of advanced driver assistance systems (ADAS), it can be used together with eye tracking devices.

10. List of the additional benefits (other than listed in the conditions for hosting a DC, see invitation) that the Institution declares to provide for a Dioscuri Centre (i.e.: additional funds, personal benefits, dual career options, relocation support or other):

- Flexible working hours,
- possibility of working part-time,
- possibility to work at home-office,
- 5 weeks holiday,
- support for further study,
- possibility of further vocational training,
- Multisport card fully paid by the employer,
- catering allowance,
- social fund (monthly contribution for leisure activities),
- preferential tariffs for mobile phones,
- sports and social events.

11. Other information about the internationalization of the research institution, international researchers employed at the institution, the availability of English language seminars etc.:

- Support in communication with authorities and with state administration bodies, assistance in filling in forms and documents,
- legal and social counseling within the organization, or arranging contact with specialized counseling facilities,
- accommodation search support,
- family support - assistance in finding childcare facilities, such as foreign language schools and kindergartens,
- support with the provision of medical care (registration to doctors),
- assigning a guide to staff members to support learning about local realities and culture.