INFRASTRUCTURE EXPERT GROUP

1. Characteristics and Objectives of the Expert Group Professional Focus

Characteristic of professional focus:

- legislative processes, technical specifications for interoperability, related standards and technical solutions for the Infrastructure subsystem;
- project of high-speed lines in the Czech Republic.

Objectives of professional focus:

- create conditions for TP members in the field of R & D activities, support the entry of members in consortia of national (TAČR, GAČR) and international projects (Shift2Rail, Horizon2020) focused on needs of TP members;
- create support for representatives of the Czech Republic in the European institutes and their working groups (CER, ERA, NB-Rail, CEN).

2. Contents of Expert Group Activities

Expert Group activities focus on the following areas:

a) Preparation and organization of workshops and training activities in the area of the Infrastructure subsystem;

b) Support for the preparation and implementation of research projects focused on high-speed lines, digitalization of infrastructure, efficient, sustainable transport infrastructure concerning to environmental impact;

c) Participation in domestic and foreign scientific and professional conferences and exhibitions (CETRA, ŽDC, Innotrans, etc.)

d) Support for foreign internships (TU Dresden, University of Žilina, TU Vilnius, Newcastle University, UP Madrid, UP Bilbao, etc.).

3. Composition of the Expert Group

	Name	*Company/Institution*	*Expertise*
Manager	Otto Plášek, Assoc. Prof., MSc. Ph.D.	Brno University of Technology, Faculty of Civil Engineering	Permanent way, railway substructure
Deputy of the Manager	Leoš Horníček, MSc.,Ph.D.	Czech Technical University in Prague, Faculty of Civil Engineering	Permanent way
Secretary	Vít Lojda, MSc.,Ph.D.	Czech Technical University in Prague,	Permanent way

		Faculty of Civil Engineering	
Members	Ivan Vukušič, MSc. Ph.D.	Výzkumný Ústav Železniční, a. s.	Permanent way, dynamic effects, barrier-free accessibility
	Bohumil Culek, Assoc. Prof., MSc. Ph.D.	University of Pardubice, Faculty of Transport Engineering	Steel structures, steel bridges
	Ondřej Jiroušek, Prof., MSc.,Ph.D.	Czech Technical University in Prague, Faculty of Transportation Sciences	Permanent way, railway substructure
	Hana Krejčiříková, Assoc. Prof., MSc. Ph.D.	Czech Technical University in Prague, Faculty of Civil Engineering	Permanent way, railway substructure
	Zbyněk Mynář, MSc.	SWIETELSKY Rail CZ s.r.o.	Railway substructure
	Marek Pětioký, MSc.,Ph.D.	Výzkumný Ústav Železniční, a. s.	Permanent way, dynamic effects, barrier-free accessibility
	Lukáš Raif, MSc.	DT – Výhybkárna a strojírna, a.s.	Permanent way, switches and crossings for high-speed lines
	Richard Svoboda, MSc.,Ph.D.	Brno University of Technology, Faculty of Civil Engineering	Technology procedures, permanent way, railway substructure
	Filip Ševčík, MSc.	University of Pardubice, Faculty of Transport Engineering	Permanent way, railway substructure
	Michal Šobr, MSc.	VŠB – Technical University of Ostrava	Digitisation of railway infrastructure, BIM

4. Specific Expert Group Collaboration with the other Members of TP IZI

Member of TP IŽI	*Content and Focus of Collaboration*
Správa železnic, státní organizace	Project of construction of high-speed lines in the Czech Republic Organizing professional workshops
Czech Technical University in Prague	Project of construction of high-speed lines in the Czech Republic
DT – Výhybkárna a strojírna, a.s.	Project Shift2Rail (Horizon2020) S-CODE (Switch and Crossing Optimal Design and Evaluation)

	Applied research projects supported by the Technology Agency of the Czech Republic Project of construction of high-speed lines in the Czech Republic
ŽPSV s.r.o.	Project of construction of high-speed lines in the Czech Republic
Výzkumný Ústav Železniční, a. s.	Interoperability of railway infrastructure
SKANSKA a.s.	Project of construction of high-speed lines in the Czech Republic
University of Pardubice, Faculty of Transport Engineering	Project of construction of high-speed lines in the Czech Republic EU Rail JU projects Applied research projects supported by the Technology Agency of the Czech Republic
Brno University of Technology	Project of construction of high-speed lines in the Czech Republic EU Rail JU projects Applied research projects supported by the Technology Agency of the Czech Republic
VOŠ a SPŠ strojní, stavební a dopravní Děčín	Project of construction of high-speed lines in the Czech Republic Quality of construction and repair works of railway tracks Organizing professional workshops

5. Overview of Implemented Projects (*in the period from 2020 to the end of 2024*)

Project Title/ Acronym	**Adaptation of the French method of evaluation of track substructure for high-speed lines into the Czech Republic conditions**
Project No	TE01020168
Funded by	Technology Agency of the Czech Republic, Doprava 2020+ program
Implementation Period	2021–2023
Total Budget	10 220 000 Kč
Beneficiary/ Coordinator	Czech Technical University in Prague
Consortium	SG Geotechnika a.s., Tensar International, s.r.o.
Project Goal/ Project Benefits	In the near future, detailed technical specifications for the construction of railway tracks for speeds over 200 km/h needed to be put into practice at national level. The project was focused on the adaptation of the French experience with the construction of track substructure on high-speed railway lines to the conditions of the Czech Rep. Differences in geotechnical survey, evaluation of geological conditions and materials for earthworks as well as in the design, construction and evaluation of the substructure between the current practice in both countries were analysed. The aim was to evaluate variant approaches to of the substructure construction, including the utilisation of geosynthetics, resulted from laboratory tests, numerical modelling and trial tests.

Project Title/ Acronym	**Academics4Rail**
Project No	No 101121842
Funded by	HORIZON-ER-JU-2022, ExplR-04
Implementation Period	2023–2027
Total Budget	1 800 000 EUR
Beneficiary/ Coordinator	EURNEX e.V.
Consortium	https://www.academics4rail.eu TP IŽI consortium members: Brno University of Technology, University of Pardubice,
Project Goal/ Project Benefits	Academics4Rail will create a stable and durable scientific community that in an organised way will share and exchange scientific knowledge with EU-Rail and ERRAC. This knowledge is shared at different levels (strategic to concrete technical areas) and for different purposes. When it comes to the strategic level the scientific community intends to share knowledge with ERRAC and EU-Rail with the purpose of optimising the program for railway research providing insights of fund use, existing themes for research and scientific necessities for the future of European railways. It also supports the methodology of program assessment using KPIs and impact estimation towards the objectives set out in the EU-Rail masterplan.

Project Title/ Acronym	**Turnout 4.0**
Project No	CK01000091
Funded by	TAČR Doprava 2020+
Implementation Period	2020–2024
Total Budget	
Beneficiary/ Coordinator	DT Výhybkárna a strojírna, a.s.
Consortium	Brno University of Technology, University of Pardubice, Retia, a.s.
Project Goal/ Project Benefits	The project aims to design an intelligent diagnostic system for railway switches and crossings (S&C). This system should detect in time the deterioration of the technical condition or failure of the S&C and allows the infrastructure manager to introduce predictive maintenance. The project will develop, build and test a HW and SW solution that is durable enough for years of use. The tool will be modular and without affecting the operation and maintenance of S&C. The project will also focus on the development of intelligent evaluation algorithms that can assess the state of the S&C design based on the dynamic response at the S&C and the vehicle. The project should contribute to extending the lifetime of the S&C structure and reducing the LCC.

6. Examples of activities implemented by IŽI members in the field of infrastructure (in the year *2024)*

- Workshop "BIM Technology - Building Information Management on Railways", 11 September 2024, Pardubice
- Workshop "Circular economy on railway structures", 20 September 2024, Prague
- Participation in NB-Rail meetings 19 March 2024, 5 September 2024
- Expert lecture on rehabilitation of sleeper subgrade, CTU in Prague, Faculty of Civil Engineering, 4 March 2024
- Expert lecture on BIM in railway construction, CTU in Prague, Faculty of Civil Engineering, 23 April 2024
- International Student Scientific Conference "Railway Research Activities 2020 (ŽELVA 2024)", Czech Technical University in Prague, 10 September 2024, Prague
- International Conference on Civil Engineering "Juniorstav 2024", Brno University of Technology, 25 January 2024, Brno

7. Representation of the Expert Group in National and European Institutions

National or European Institution	*Name*	*Company*
TC256/SC1/WG18	Lukáš Raif	DT – Výhybkárna a strojírna, a.s.
NBRAIL	Ivan Vukušič	Výzkumný Ústav Železniční, a. s.
TC256/SC1/WG16	Leoš Horníček	Czech Technical University in Prague, Faculty of Civil Engineering
CEN: TC256/SC1/WG16 TC256/SC1/WG46	Otto Plášek	Brno University of Technology, Faculty of Civil Engineering
Czech Standardization Agency: TNK 141	Hana Krejčiříková Marek Pětioký Otto Plášek Danuše Marusičová Jan Čihák	Czech Technical University in Prague, Faculty of Civil Engineering Výzkumný Ústav Železniční, a. s. Brno University of Technology, Faculty of Civil Engineering Interoperability of Railway Infrastructure Správa železnic, DG O13