

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

	<i>Name</i>	<i>Company/Institution</i>	<i>Expertise</i>
<i>Manager</i>	Otto Plášek, Assoc. Prof., MSc. Ph.D.	Brno University of Technology, Faculty of Civil Engineering	Permanent way, railway substructure
<i>Deputy of the Manager</i>	Leoš Horníček, MSc., Ph.D.	Czech Technical University in Prague, Faculty of Civil Engineering	Permanent way
<i>Members</i>	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
	Libor Culík, MSc.	ŽPSV s.r.o.	Concrete products for railway structures
	Leopold Hudeček, MSc. Ph.D.	VŠB – TUO, Faculty of Civil Engineering	Permanent way, railway substructure
	Ondřej Jiroušek, Prof., MSc.,Ph.D.	Czech Technical University in Prague, Faculty of Transportation Sciences	Permanent way, railway substructure
	Hana Krejčířková, Assoc. Prof., MSc. Ph.D.	Czech Technical University in Prague, Faculty of Civil Engineering	Permanent way, railway substructure
	Martin Lidmila, Assoc. Prof., MSc. Ph.D.	Czech Technical University in Prague, Faculty of Civil Engineering	Permanent way, railway substructure
	Danuše Marusičová, MSc.	Interoperability of Railway Infrastructure	Permanent way, railway substructure
	Zbyněk Mynář, MSc.	Správa železnic, DG O13	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
	Tomáš Říha, MSc.	Brno University of Technology, Faculty of Civil Engineering	Permanent way, railway substructure
	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
	Jan Valehrach, MSc.	Brno University of Technology, Faculty of Civil Engineering	Permanent way, railway substructure
	Jan Vodička, Assoc. Prof., MSc. Ph.D.	Czech Technical University in Prague,	Permanent way, railway substructure

		Faculty of Civil Engineering	
<i>Other Associates</i>	Jan Čihák, MSc.	Správa železnic, DG O13	Permanent way
	Marek Smolka, MSc., MBA	DT – Výhybkárna a strojírna, a.s.	Switches and crossings
	Radek Trejtnar, MSc., Ph.D.	Správa železnic, DG O13	Permanent way, railway substructure

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

<i>Member of TP IZI</i>	<i>Content and Focus of Collaboration</i>
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) Project TA CR Doprava 2020+ Turnout 4.0 Operational diagnostics of indicators of railway tracks by measuring its track quality 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 Project Shift2Rail (Horizon2020) S-CODE (Switch and Crossing Optimal Design and Evaluation) Project TA CR Doprava 2020+ Turnout 4.0 Operational diagnostics of indicators of railway tracks by measuring its track quality Project TA CR Zéta - TJ04000301 – Non-destructive determination of mechanical stress in continuous welded rail
Brno University of Technology	Project of construction of high-speed lines in the Czech Republic Project Shift2Rail (Horizon2020) S-CODE (Switch and Crossing Optimal Design and Evaluation) Project TA CR Doprava 2020+ Turnout 4.0
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 2018 to the end of 2020*)

<i>Project Title/ Acronym</i>	Centre for Effective and Sustainable Transport Infrastructure (CESTI)
<i>Project No</i>	TE01020168
<i>Funded by</i>	Technology Agency of the Czech Republic, Competence Centres program
<i>Implementation Period</i>	2013–2019
<i>Total Budget</i>	
<i>Beneficiary/ Coordinator</i>	Czech Technical University in Prague
<i>Consortium</i>	see www.cesti.cz
<i>Project Goal/ Project Benefits</i>	Centre for Effective and Sustainable Transport Infrastructure (CESTI) is a project focused on technical innovations aimed at elimination of deficiencies in today's transport infrastructure. It deals with road and railway transport network including bridges and tunnels. Environmental issues, aspects of safety and reliability of structures and effective management systems are addressed comprehensively. The project responds to the requirements for cost efficient, material and energy sustainable, resilient, reliable, smart and accessible transport infrastructure.

<i>Project Title/ Acronym</i>	Switch and Crossing Optimal Design and Evaluation (S-CODE)
<i>Project No</i>	No 730849
<i>Funded by</i>	Shift2Rail, Open Call, IP3
<i>Implementation Period</i>	2016–2019
<i>Total Budget</i>	
<i>Beneficiary/ Coordinator</i>	University of Birmingham
<i>Consortium</i>	viz www.s-code.info
<i>Project Goal/ Project Benefits</i>	The S-CODE project identifies radically different technology concepts that can be integrated together to achieve significantly improved performance for S&C based around next operating concepts (e.g. super-fast switching, self-healing switch). The project follows existing European and national research projects (in particular, the lighthouse project In2Rail, Capacity4Rail and Innotrack) to bring together technologies and concepts that will significantly reduce the constraints associated with existing switch technologies and develop a radically different solution. The S-CODE project is a research and innovation action under IP3 of the Shift2Rail Multi Annual Action Plan. IP3 aims to establish cost efficient and reliable infrastructure. The S-CODE project is part of technical demonstrator TD3.2 – Next Generation Switch & Crossing.

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. Overview of Implemented Expert Group Activities (in the period *from 2019 to the end of 2020*)

- Workshop „Description of Railway Network“, 9. 1. 2019, Prague
- Workshop „ Quality of constructions and repairs of railway tracks“, 20. – 21. 2. 2019, Děčín
- Workshop „ Diagnostic system for switches and crossings based on measurement and evaluation of dynamic effects “, 19. 6. 2019, Prague
- International Student Scientific Conference „ Railway research activities 2019 (ŽELVA 2019)“, 17. – 18. 9. 2019, Choceň
- Workshop of S-CODE project (Switch and Crossing Optimal Design and Evaluation), 30. 9. 2019, Dřítěč
- Workshop „ Technology of construction of HSL pilot sections in the Czech Republic “, 31. 10. 2019, Prague
- International conference „International Geosynthetics Society, Technical Committee on Stabilization“, 10. – 12. 11. 2019, Prague
- Conference „ Transport infrastructure construction “, 26 – 27. 2. 2020, Děčín
- International Student Scientific Conference „ Railway research activities (ŽELVA 2020)“, 16. – 17. 9. 2020, Přebyslav

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

<i>National or European Institution</i>	<i>Name</i>	<i>Work Place</i>
TC256/SC1/WG18	Lukáš Raif	DT – Výhybkárna a strojírna, a.s.
CEN: TC256/SC1/WG15 TC256/SC1/WG21 TC256/SC1/WG28 TC256/SC1/WG32	Radek Trejtnar	Správa železnic, DG O13
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
National Platform Shift2Rail	Otto Plášek Lukáš Raif	Brno University of Technology, Faculty of Civil Engineering DT – Výhybkárna a strojírna, a.s.
Czech Standardization Agency: TNK 141	Hana Krejčíříková Marek Pětioký Otto Plášek Danuše Marušičová 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