

Project Objective

SMART2 project will build on the results achieved in project SMART by advancement, innovation and implementation of SMART2 on-board long-range all-weather obstacle detection (OD) and track intrusion detection (TID) system. Two new systems will be also researched, innovate and developed: advanced SMART2 trackside (TS) /airborne OD&TID system. All three systems will be integrated into a holistic OD&TDI system via interfaces to central Decision Support System (DSS).

A holistic approach to autonomous obstacle detection for railways would enable increased detection area including areas behind a curve, slope, tunnels and other elements blocking the train's view on the rail tracks, in addition to a long-range straight rail-tracks OD.

The data recorded will be processed to inform DSS about possible obstacles and track intrusions in their fields of view. DSS will integrate information coming from three OD&TID sub-systems and will make final decision on OD&TID and will suggest possible actions for the train control. SMART2 platform will be flexible and open for interfacing additional OD&TDI modules based on future technologies.

Consortium Members

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OHB Digital Services, Germany
University of Niš, Serbia
University of Newcastle, United Kingdom
Technical University of Cluj-Napoca, Romania
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Smart2

SMart Automation of Rail Transport 2

Advanced integrated obstacle and track intrusion detection system for smart automation of rail transport

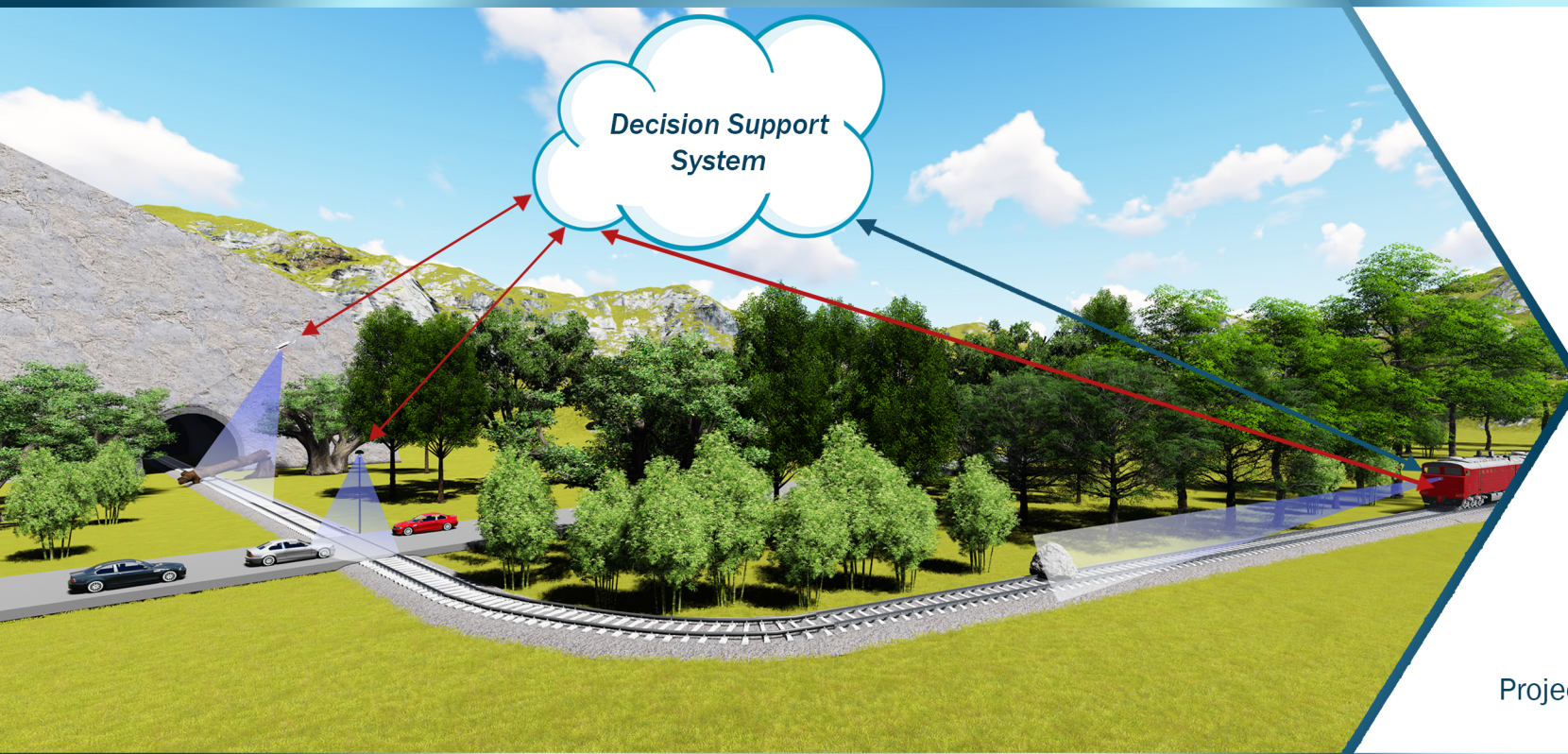
www.smart2rail-project.net



Project Objective

SMART2 project aims at developing a working prototype of the foreseen holistic OD&TDI that will be evaluated in different real-world railway use-case scenarios. The SMART2 vision of holistic approach to the obstacle and track intrusion detection in railways is illustrated below.

Work Packages



Use Cases, Requirements and Specifications WP1

On-board obstacle and track intrusion detection system WP2

Trackside/Airborne obstacle and track intrusion detection system WP3

Decision Support system WP4

Prototype integration WP5

Evaluation WP6

Dissemination and exploitation WP7

Project management and coordination WP8

By development of advanced innovative solution for obstacle and track intrusion detection system, SMART2 will contribute to competitiveness, efficiency and operational reliability of railway traffic through the OD and TID automation necessary for GoA 3/4 operation.

SMART2 will deliver the following measurable objectives:

- Definition of requirements and specifications for the long-range all-weather conditions on-board OD&TID system, as well as for its interfaces to other possible OD&TID systems such as airborne-based systems, in line with the achievement of SIL 4 for the entire GoA 3/4 system;
- Development of TRL 6/7 prototype of on-board OD&TID system to detect potentially dangerous objects on the train's path in long-range of up to 2000 m and on "collision" paths with the train;
- Development of two TRL 6/7 prototype systems for OD&TID based on trackside (TS)/airborne systems;
- Development of TRL6/7 prototype of holistic OD&TID for the railway consisting of on-board and TS/airborne OD&TID subsystems together with decision support and self-diagnostics subsystems.