

STRATEGIC DIRECTION SESSION 4 - RESILIENT INFRASTRUCTURE - NEW CHALLENGES AND INITIATIVES FOR IMPROVING SAFETY AND SUSTAINABILITY



SMART SOLUTIONS IN SLOVAKIA (NATIONAL REPORT)

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The report in question includes a global view of achieved results and potential opportunities for the continuous improvement of road management in the extended system of digitization process, with an emphasis on data acquisition, systematic monitoring of assets as well as construction materials and their multiple reuse (qualitatively hierarchically conditioned) for the next mission in the service of road users.

The vision and strategies for the future direction of transport in Slovakia from the point of view of digital transformation are mainly summarized in the documents Strategy for Intelligent and Sustainable Mobility of Slovakia and Action Plan for the Digital Transformation of Slovakia within the topic of Intelligent Mobility, which is a part of strategic goal "We will create the foundations for modern digital and data economy and for the digital transformation of the wider economy" following the Program Declaration of the Government of the Slovak Republic for the period 2020-2024.



DETECTION OF TRAFFIC SIGNS

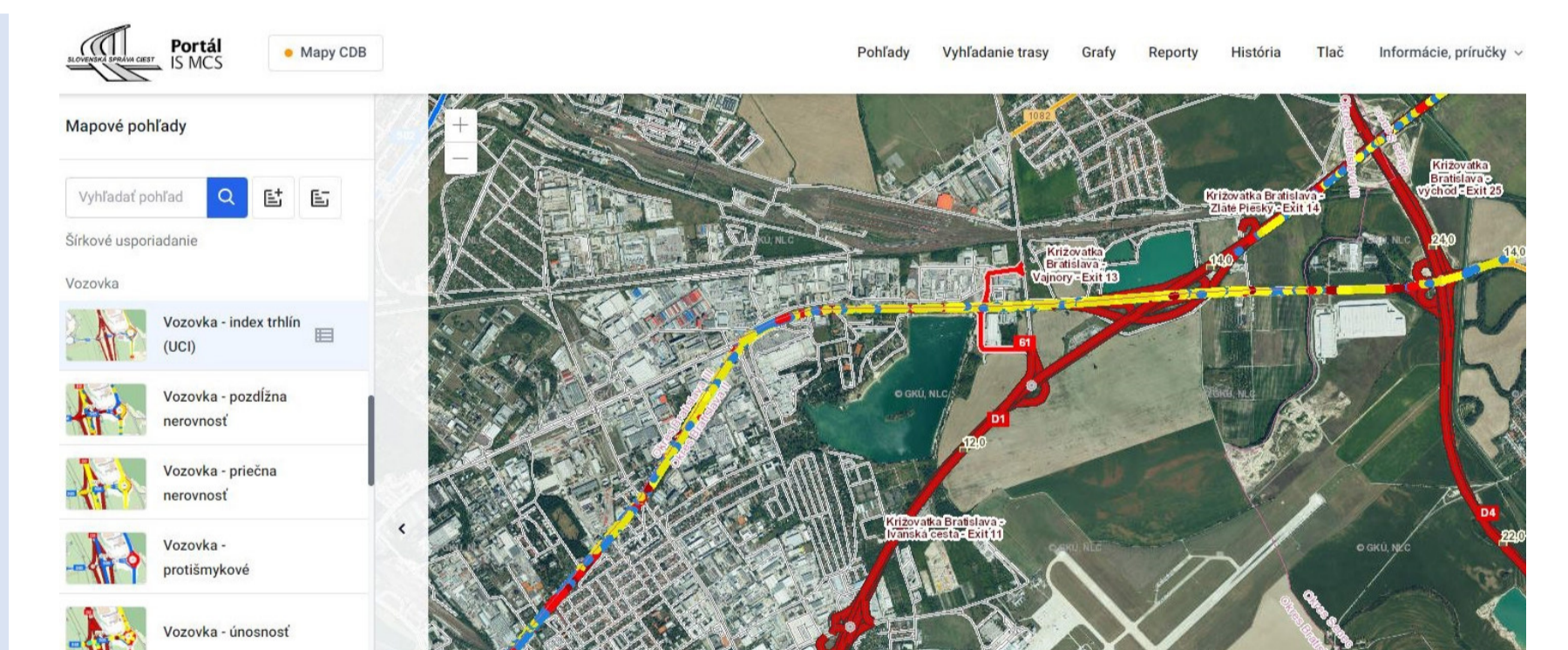
Project to verify readiness of traffic signs

The output of the project was the analysis of established facts, focused on the reliability of detection of various types of traffic signs on Slovak roads by sensors and methods that are standardly used in modern cars as a basis for advanced assistance systems, or autonomous driving at one of the levels.

DIGITAL ASSET MANAGEMENT

Digital pavement management by road authority

Digital representation of roads, giving previously inaccessible insights to help maintain, operate, and improve safe, clean, digital roads. The software environment representing a set of applications and tools, which is used in Slovakia for the implementation of digital asset management, is called the Road Network Model Information System (IS MCS) and is managed by the Road Databank Department of the Slovak Road Administration.



INTELLIGENT SENSOR TECHNOLOGIES

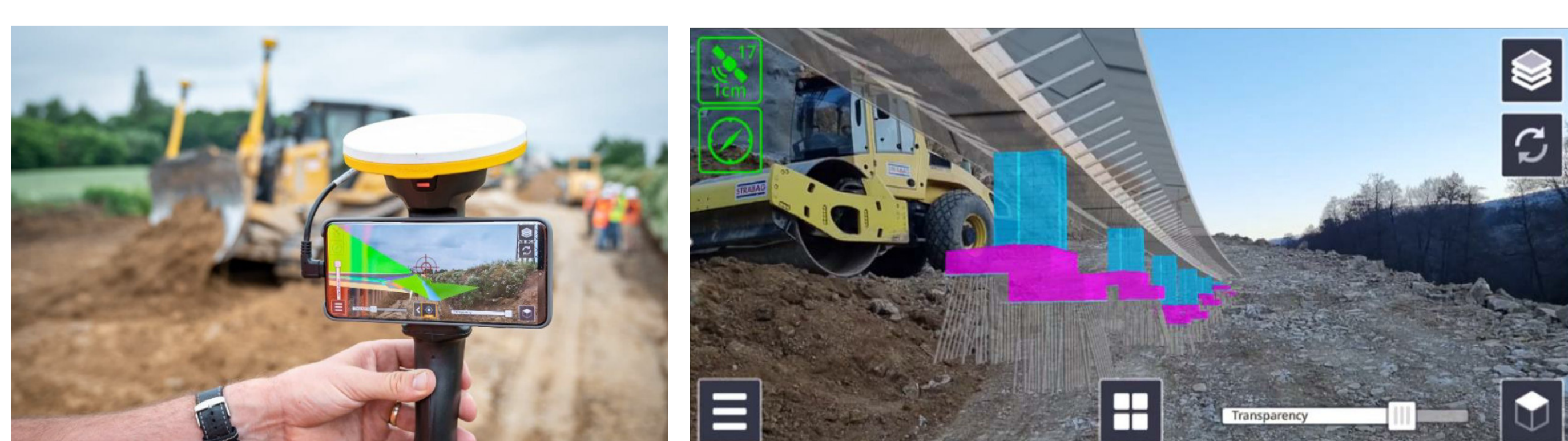
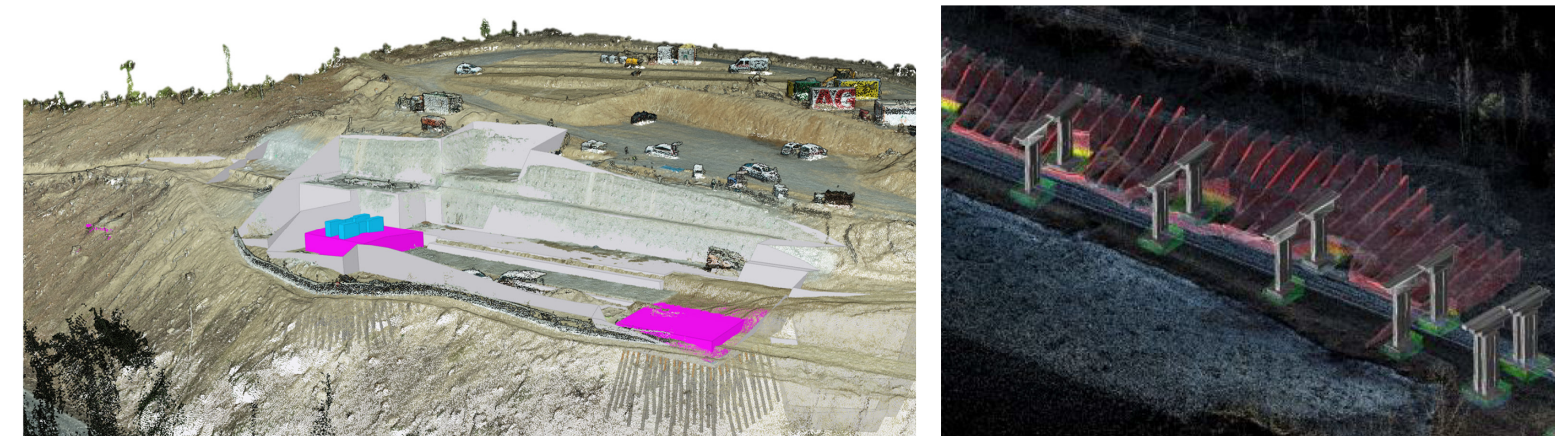
Automatic Traffic Counters (ATC) and Weight-In-Motion (WIM)

ATCs are tool for data acquisition and effective planning of the construction and maintenance of transport infrastructure. Pre-selective WIM systems built-in pavements are used within the global system for checking the total weight and axle load of heavy vehicles applied in Slovakia.

BIM APPLICATION

R2 Kriváň - Mýtna expressway project

Example of successful BIM application in construction by a private company is the ongoing construction project of the R2 Kriváň - Mýtna expressway. The initial data acquisition was carried out using drones and UAVs with LIDAR in the form of a 3D point cloud. BIM was also used in this project for visualisation, coordination of disciplines, time management, control of processes, machine guidance and also for AR.



AUGMENTED REALITY (AR)

Part of R2 Kriváň - Mýtna expressway project

In many ways, the future of AR in construction is already here. The technologies that enable the above-mentioned use cases already exist, and several firms are starting to test and refine augmented reality initiatives. AR is also used on R2 building site for object visualisation on site and for position and height control of models for machine guidance.