

## **01-D6-14 – Predicting and Preventing Traffic Accidents Using AI and Big Data (RIA)**

BRAINEST – Innovation Partnership of the Bratislava Region is an association of legal entities established by the Bratislava Self-Governing Region, the Slovak University of Technology, the Slovak Academy of Sciences and Seed Starter SK (member of Erste Group). Its mission is to serve as a joint platform for developing a strong, resilient and internationally connected regional innovation ecosystem.

BRAINEST connects universities, research organisations, public authorities, schools and companies to coordinate projects in research, innovation and technology transfer, support talent and education, and modernise public policies in the fields of innovation, competitiveness and resilience.

BRAINEST brings together the expertise and capacities of universities, academia, public authorities, industry and financial institutions. This unique ecosystem enables the piloting of innovative solutions across multiple domains — industry and manufacturing, education, healthcare and social services, mobility, building management and construction, energy efficiency and the environment — with a strong focus on practical implementation, user adoption and EU-wide scalability.

### **Road Infrastructure of the Bratislava Region**

Project overview: The Bratislava Self-Governing Region (BSK) manages an extensive network of regional roads (class II and III), bridges, intersections and transport corridors connecting Bratislava with surrounding municipalities. Through its Road Administration, the region is responsible for operation, maintenance, winter services, traffic monitoring and safety management.

BSK's readiness for this call: BSK is prepared to provide its infrastructure, operational data and local knowledge for AI, big-data and digital-twin development, including:

- road segments with different geometries, traffic volumes and risk profiles,
- intersections near schools, hospitals, public transport hubs and residential areas,
- corridors with intense car traffic, cycling flows and micromobility,
- areas with known patterns of near-miss situations, slippery surfaces and weather-sensitive risks.

The Bratislava Region can directly support all core objectives of the topic:

- Predictive safety modelling: access to historical incidents, real-time operations data, meteorological conditions and maintenance records;
- AI-enhanced digital twin of regional transport infrastructure: integration of multi-source data (sensors, cameras, maintenance logs, road topology);
- Detection of risk situations before accidents occur: ability to test algorithms on real risk segments and validate predictive outcomes;
- Real-time interventions: cooperation with police, municipal police, BSK crisis management and Road Administration to test warnings, speed adjustments and signage interventions;
- FAIR data and interoperability: BSK is ready to work within European data space frameworks and comply with data governance requirements.

Possible pilot locations

- Access roads to Bratislava (e.g., Senec – Bernolákovo – Bratislava; Pezinok – Modra – Bratislava),
- Critical intersections near schools, hospitals and care facilities,
- Sections with high cycling and micromobility volumes,

Why this pilot is valuable for the consortium

- Access to real, complex and safety-relevant infrastructure in an urban–suburban region.
- Unique dataset combination (traffic, weather, incidents, maintenance, road conditions).
- High potential for scalable validation across multiple road types and user groups.
- Strong governance and stakeholder cooperation led by BSK and coordinated by BRAINEST.
- Excellent fit with EU expectations for FAIR data, societal impact and replicability.