The Role of Digital Technologies in EU R&I for Smart Regional Transport

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Abstract Digital technologies are playing an increasingly central role in shaping the future of regional mobility systems. As cities and regions strive to become more connected, sustainable, and resilient, the integration of digital innovation into transport planning and operations is becoming essential. This paper explores how transversal digital technologies are being leveraged in EU-funded research and innovation (R&I) projects to support the development of smart regional transport systems.

Drawing on insights from the Transport Research and Innovation Monitoring and Information System (TRIMIS) and CORDIS databases, the paper highlights how technologies such as Artificial Intelligence, Internet of Things, Blockchain, Digital Twins, and Edge/Cloud Computing are contributing to the digital transformation of mobility. These technologies offer new opportunities to enhance multimodal integration, improve infrastructure efficiency, and enable more responsive and inclusive transport services across urban and rural areas.

The analysis focuses on selected EU R&I projects that demonstrate the relevance of digital innovation for regional transport, and discusses key challenges and enablers for implementation. It is grounded in a structured and replicable methodology combining keyword-based searches, relevance filtering, and both manual and automated project evaluations. Projects were selected using criteria such as budget thresholds, start dates, and the centrality of digital technologies to the project objectives. A tiered classification system was applied to assess the role of digital technologies within the projects, distinguishing between central, important, and supplementary roles, ensuring a focused review of the most impactful and representative initiatives. This approach enabled a comprehensive yet targeted exploration of EU-funded innovation trends in the transport sector.

The paper concludes with policy recommendations to support the effective deployment of digital solutions in regional mobility systems, contributing to the broader goals of the European Green Deal and the Sustainable and Smart Mobility Strategy.