

Tuesday, 16 June, 2026

Europe Prepares for a New Era of Traffic Management: From Traffic Control to Traffic Orchestration

After its first year, the Horizon Europe project CARMONY has established the vision, architecture and stakeholder community needed to transform how traffic is managed in increasingly complex mobility environments.

As European cities and transport networks face growing congestion, increasing mobility demand, and the rapid emergence of connected and automated technologies, traditional traffic management approaches are reaching their limits. The challenge is no longer simply managing vehicles on the road, but coordinating an increasingly diverse ecosystem of actors, services, infrastructure and data streams in real time.

To address this challenge, the Horizon Europe project CARMONY is developing a new approach: **traffic orchestration**. After completing its first year, the project has reached a major milestone by defining the foundations of a coordinated orchestration framework designed to make mobility systems safer, more efficient, more sustainable and more responsive to real-world conditions.

Rather than treating traffic signals, vehicles, public transport services, road operators and mobility providers as isolated elements, CARMONY aims to enable them to work together as part of a connected and collaborative ecosystem. Through real-time data exchange, predictive decision-making and coordinated actions, traffic orchestration has the potential to improve mobility performance while supporting broader societal goals such as emissions reduction, safety and quality of life.

“During the first year of CARMONY, we have transformed an ambitious vision into a strong collaborative foundation,” said Simon Genser, Project Coordinator at Virtual Vehicle Research GmbH. “Together with our partners, we have successfully defined the project requirements, established the initial orchestration architecture, engaged stakeholders across Europe, and laid the groundwork for the technical developments to come. This progress puts us in a strong position to move from concept to implementation and drive the project successfully into its second year.”

Over the past twelve months, the consortium has successfully completed the project’s initial conceptual phase, delivering key results that will guide the next stages of development. Among the most significant achievements are the definition of the CARMONY orchestration vision, the design of the project’s initial technical architecture, the identification of governance and operational requirements, and the establishment of the CARMONY Outreach Group, which already brings together experts and stakeholders from across Europe to contribute to the project’s development.

CARMONY’s work responds directly to a growing need across Europe. As cities introduce Low Emission Zones, connected vehicle technologies, cooperative intelligent transport systems and increasingly data-driven mobility services, traffic management authorities require new tools capable of coordinating



multiple actors and objectives simultaneously. Traffic orchestration represents a shift from reactive traffic control towards proactive, collaborative and human-centred mobility management.

The first year marked important progress in preparing CARMONY's real-world pilot environments. In Murcia, Spain, partners worked closely with local stakeholders to define urban use cases addressing congestion, Low Emission Zones and the coordination of mobility services in a rapidly evolving urban mobility ecosystem. In Luxembourg, the project established the foundations for tackling traffic challenges along key cross-border commuting corridors, where daily traffic flows require coordinated responses across multiple actors, systems and jurisdictions. The pilot activities have directly influenced the project's technical requirements, governance considerations and development roadmap, ensuring that future solutions are grounded in real operational needs rather than purely theoretical concepts.

The project will now enter a new phase focused on technical development, simulation and validation. In the coming months, partners will advance the implementation of the orchestration platform, decision-support capabilities, governance models and user-facing interfaces before moving towards large-scale testing in Murcia and Luxembourg.

Combining technological innovation with governance, stakeholder engagement and real-world validation, CARMONY aims to contribute to the next generation of mobility management solutions and support Europe's transition towards safer, cleaner and more resilient transport systems. As connected, cooperative and automated mobility continues to evolve, CARMONY is helping define how future mobility ecosystems can move beyond traffic management and towards true traffic orchestration.

About CARMONY

CARMONY (Coordinated Action for Responsive Mixed Orchestration and Network Yield) is a Horizon Europe research and innovation project developing innovative approaches to traffic orchestration in mixed mobility environments. Bringing together research organisations, technology providers, public authorities and industry partners from across Europe, the project aims to create the governance frameworks, technical solutions and operational models required for responsive, coordinated and human-centred mobility management.

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