

Discover FRONTIER

FRONTIER is providing new network and integrated traffic management strategies through transport-automated vehicles to minimise pollution, traffic, accidents, and transport costs. It is bringing resilient multimodal autonomous mobility by facilitating collaboration among stakeholders and developing business models that ensure the commercial viability of these new solutions.

FRONTIER will develop, apply and test autonomous management systems that use data from real-time monitoring of the transport system, leveraging expertise of transport operators and decision makers. It will also develop models and solutions for new mobility services and technologies.

FRONTIER's ideas will be tested in Oxfordshire (UK), Athens (Greece) and Antwerp (Belgium), focusing on three main themes:

- Smart Infrastructures and Connected and Automated Vehicles (CAV) integration
- Multimodal mobility for passengers and freight cross-stakeholder collaboration
- Network performance analysis for planning and policy making



Partners

FRONTIER brings together partners from five universities and research institutes, seven companies, five transport authorities from three European countries, one testbed for traffic management and one international road federation.



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FRONTIER
FUTURE MOBILITY

Next generation
**NETWORK & TRAFFIC
MANAGEMENT**
for future mobility



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Our vision

Mobility is undergoing unprecedented transformation shaped by increased urbanisation, connectivity and new business models. With increased transport and growing populations that negatively affect climate change, traffic management will play a crucial role in overcoming transport-related risks and challenges. The EU-funded FRONTIER project is bringing together 19 partners from all over Europe to propose a new era in Network and Traffic Management (NTM), introducing new systems and techniques to manage traffic on transport networks. FRONTIER is integrating also the new mobility choices and solutions that are appearing.



Solutions

Traffic Management Systems of the future

- Artificial Intelligence tools for integrated network and traffic management.
- Proactive decision support tools and algorithms to facilitate integration among actors and agencies.
- Innovative approaches and network strategies for decentralised and hybrid network control design.
- A "personalised nudge engine" for travellers, helping to achieve the proposed management strategies.

Multi-stakeholder partnerships

- **Innovative, collaborative business models** to create and share value among stakeholders in a multimodal transport ecosystem.
- **Collaboration models and data management solutions** for local authorities, municipalities, transport operators and road operators to enhance data sharing, traffic management, resilience, responsiveness, and security.

- **Framework for arbitration models** involving multiple partners to tackle vehicle planning and traffic management challenges.
- **Chain cost models** to calculate demand for multimodal services leading to better services for users.

Data fusion and stream processing for dynamic traffic management

- Data fusion and harmonisation using big data from transport industries, sensors and services.
- Common integration of information to promote semantic interoperability and sensor integration in transport.
- Merged information from transportation sensors, urban services, environment for enhanced operational and planning decisions.

Estimation, Prediction and Optimisation for future multimodality

- Supply-demand optimisation tools focusing on water, road interurban, and last mile urban logistics.
- Event-driven data fusion involving machine learning and traffic simulation for proactive traffic prediction and management to enhance decision making and support traffic network analysts.
- Traffic estimation and prediction techniques using connected vehicle data (speed and position) and infrastructure spot detectors to observe traffic flow, density and speed.



19 partners



8 European countries



3 Pilot sites



4 solutions

Test cities & expected outputs

TEN-T Corridor, Oxfordshire, UK

- Trials for CAVs at UKAEA RACE using communications systems linked to traffic management systems.
- Review of key factors affecting CAV-to-traffic management interfaces, including cybersecurity.
- Digitalisation of communication between vehicles and local authority-led Traffic Management.
- Stronger partnerships for future network management to optimise how people and goods move in cities and regions.

Attiki Odos motorway, Greece

- Quantitative and qualitative impact assessment for new forms of mobility
- Roadmap for V2I (vehicle-to-infrastructure) and V2N (vehicle-to-network) functionality for future traffic management applications
- Assessment of interconnected, integrated and interoperable network of systems and organisations

Antwerp Port, Belgium

- Roadmap for future freight traffic management applications
- Assessment of interconnected network of organisations
- Arbitration models for dealing with private conflict of interests



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