



Horizon Europe 2020 project ORCHESTRA kicks-off

27th of May 2021 - Teams

The kick-off for the EU project ORCHESTRA took place over two days in a virtual format.

Sixteen partners and over 40 participants from 6 different countries took part in launching this exciting project about the orchestration of traffic management across all transport modes and in the presence of connected and automated vehicles (CAVs).

ORCHESTRA is a three-year RIA – research and innovation action project – funded by the Horizon Europe 2020 program with 5 million €.

Ambition

The ambition is to design a multimodal traffic management ecosystem and build and demonstrate technical solutions, organisational aspects, processes, and tools. In addition, simulations will train personnel to work with the new solutions in various scenarios. Traffic management traditionally coordinates traffic flows within “their silo” (road network, railway network, a set of fairways, air corridors, etc.). The introduction of CAVs, and new situations, as exemplified by the COVID-19 pandemic, stresses the conventional transport systems and questions if they are robust and resilient enough. In ORCHESTRA, a multimodal traffic management ecosystem will be designed to handle changes in requirements and procedures efficiently and assess whether laws, regulations, management, and organisational practices are designed for optimal handling of both normal operation and crisis.

The vision of the project

The long-term vision of ORCHESTRA is a future where it is easy to coordinate and synchronise traffic management of all modes to cope with diverse demands and situations. ORCHESTRA will facilitate optimal transport networks and efficient multimodal transport services, both in rural and urban areas, for people and goods. ORCHESTRA will bridge the current silos within traffic management.

Traffic management for sea, road, rail, and air transport should work together to support new multimodal transport services. It needs to facilitate better utilisation and more resilience in all situations – from daily operations to disasters.

ORCHESTRA will support key stakeholders, including practitioners, policymakers, public authorities, transport providers, and users, with tools and best practices to enhance collaboration and synchronising multimodal traffic management. The project will assess rules and regulations for data governance and sharing and efficient traffic management, supported by intelligent infrastructure and CAVs.

Demonstrations

The project's solutions will be prototyped and evaluated in two Living Labs. This will provide concrete evidence on how technological capabilities and organisational practices can be integrated to optimise transport through selected use cases. Demonstrations include coordinating freight and passenger flows across modes in a dynamic, safe, secure, and sustainable manner. The use cases will be upscaled



through simulations to evaluate complex multi-actor actor scenarios and manage irregularities (including disasters).

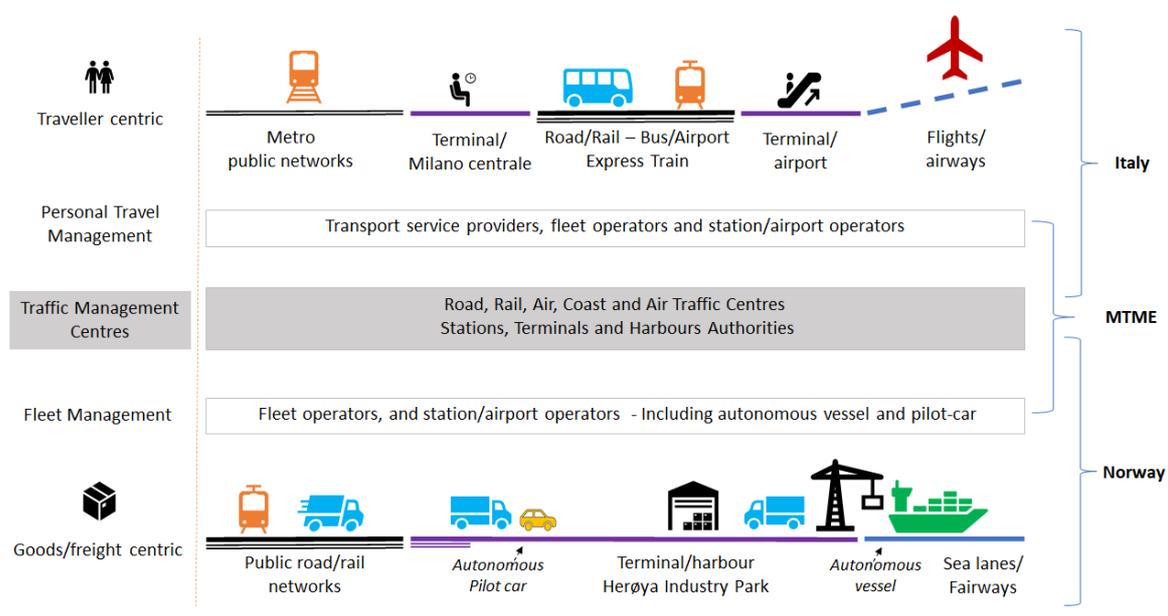


Figure 1 Multimodal traffic management in the two Living Labs - person (Italy) and freight (Norway) transport

- Milan Malpensa airport will focus on efficient door-to-gate routing according to preferences (fastest, cheapest, etc.) to optimising traffic and passenger flow in Italy.
- In Norway Herøya Industrial Park, the pilot will focus on fully automatization by facilitating and aligning traffic management measures.

Orchestra project fact sheet

Name of project: ORCHESTRA

Total cost: 5.2 million €

EU Contribution: 5.0 million €

Coordinator: ITS Norway

Partners: ITS Norway, SINTEF, Technische Universitet Delft, Haute Ecole Specialisee De Suisse Occidentale, Certx, IKEM, IOTA Foundation, Societa Per Azioni Esercizi Aeroportuali (SEA), Deep Blue, FSTechnology, CEREMA, Applied Autonomy, Herøya Industripark, Norwegian Public Roads Administration, ENAV and its linked third party Techno Sky



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Figure 2 Selection of partners joining the second kick-off meeting

Companies part of Orchestra



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 953618 The content of this presentation reflects only the author's view and the European Commission is not responsible for any use that may be made of the information it contains.

About ITS Norway

ITS Norway is a membership association for everyone in the transport industry. The association works to develop, promote, and coordinate the implementation of ITS in Norway. The goal is to promote smarter, safer, and more sustainable transport.

About SINTEF

SINTEF is a broad, multidisciplinary research organisation with top-level international expertise in the fields of technology, the natural sciences, medicine, and the social sciences. We conduct contract R&D as a partner for the private and public sectors, and we are one of the largest contract research institutions in Europe. SINTEF is the Technical Manager of ORCHESTRA.

About Enav S.p.A.

ENAV is the Italian air navigation service provider, ensuring safety and reliability 24/7 for the 2 million flights handled yearly from the control towers of 45 airports and 4 Area Control Centres (ACC). With a workforce of 4,200, the company provides air navigation services to its numerous customers, the airlines that fly over Italian airspace. Long considered among the European “big five” for operating performance and innovation, ENAV is a key part of the international Air Traffic Management system.



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About Techno Sky (ENAV's LTP).

Techno Sky is ENAV's logistics and maintenance company that ensures full, seamless operating efficiency and availability of Italy's ATC (Air Traffic Control) installations, systems, and software products. It manages and maintains 44 radar systems, 121 telecommunication centres, 68 weather systems, 239 navigational aid systems, and 28 software systems for a total number of 30,493 ATM applications in operation at 45 airports, 4 Area Control Centres and 54 remote sites.

About IKEM

IKEM is an independent research institute founded in 2009, which is based in Berlin. IKEM focuses on research and project management in the field of energy, mobility and climate protection. The main research focus is on the interactions between the legal, economic and political frameworks. It is an accredited non-governmental organization with the UN Economic and Social Council and a associated research institute of Greifswald University.

About IOTA Foundation

The IOTA Foundation is a global not-for-profit foundation incorporated and headquartered in Germany. The IOTA Foundation's mission is to support the research and development of new distributed ledger technologies (DLT), including the IOTA Tangle. In addition, the Foundation encourages the education and adoption of distributed ledger technologies through the creation of ecosystems and the standardization of these new protocols. The IOTA Tangle moves beyond blockchain by providing the world's first scalable, feeless and fully decentralized distributed ledger technology. The Tangle uses its unique technology to solve three fundamental problems with blockchain technology: high fees, scaling and centralization.

About NPRA (Norwegian public road administration)

The NPRA is an administrative body and a provider of national public services, subordinate to the Ministry of Transport and Communications. The NPRA is the roads authority for national roads and is responsible for managing, researching, planning, building, operating, and maintaining national roads. We are also the licensing authority for national ferry connections and for passenger and goods transport and allocate exclusive rights to operate national ferry connections. The NPRA has the authoritative responsibility within ITS (Intelligent Transport Systems) to develop a future-oriented comprehensive and coherent road transport system. We have the authority to adopt regulations in certain fields, and we specify standard requirements for all public roads (national roads, county roads and municipal roads).

Our mission is to develop and facilitate a comprehensive and coherent future-oriented transport system for the entire country, promoting mobility and traffic flow, reducing transport accidents, and contributing to the desired transition into a low-emission society.

[Read more about NPRA](#)

About CEREMA

CEREMA, which stands for Centre for Studies and Expertise on Risks, the Environment, Mobility, and Urban planning, is the French major public agency for developing public expertise in the fields of urban planning, regional cohesion and ecological and energy transition for resilient and climate-neutral cities and regions. It has a staff of 2,600 people, out of which 500 are dedicated to



research and innovation activities. CEREMA is an integrator of skills with a unique approach from research to proof-of-concept and effective launch, including evaluation.

About CertX

CertX is the first Swiss accredited Certification body in Functional safety and security domain. CertX plans to offer the certification of Safety & Security relevant products, Safety & Security Engineers/Managers and also to Safety & Security related quality management systems.

About Deep Blue

Deep Blue Deep Blue is a research and consultancy Italian SME specialised in the human factor, user-centred design, safety, security, and validation in the Transport, ICT, Healthcare, and Manufacturing domains. Deep Blue has a multidisciplinary team of specialists in safety, security and dependability, human factors, cognitive psychology, interaction design, and engineering.

The company's area of activity is the analysis and user-centred design of innovative systems, with a particular focus on the interaction, integration, and allocation of functions between their human, procedural, and equipment components.

About HIP (Herøya Industrial Park, Norway)

Herøya Industrial Park is one of the biggest industrial parks in Norway and is situated in the municipality of Porsgrunn in Telemark, 150 km south of Oslo. With its strategic location on the coast in the far south of Norway, Herøya Industrial Park is the best choice for export companies and anyone else who needs fast, efficient links with Europe and the rest of the world. About 80 businesses with approx. 2.500 employees have established themselves at Herøya Industrial Park. They represent a wide range of sizes and sectors – from industrial and maintenance companies with many hundreds of employees to smaller start-ups with just a few employees.

About TU Delft

Delft University of Technology, also known as TU Delft, is the oldest and largest Dutch public technical university. Located in Delft, Netherlands, it is consistently ranked as one of the best universities in the Netherlands, and as of 2020 it is ranked by QS World University Rankings among the top 15 engineering and technology universities in the world. With eight faculties and numerous research institutes, it has more than 26,000 students (undergraduate and postgraduate) and 6,000 employees (teaching, research, support, and management staff). TU Delft's mission is impact for a better society.

About FST

FSTechnology S.p.A is the ICT Company of the Ferrovie dello Stato Italiane Group (FS Group) that manages the existing FS ICT landscape composed by more than 800 application systems and more than 450 employees with ICT professional skills. FSTechnology provides to the companies of the group the following services:

- a) ICT Services to Ferrovie dello Stato Italiane Group and to the Market;
- b) Outsourcing and management of:
 - Technological infrastructures;
 - ICT business architectures;
 - Service Center for data management and network management;



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Considering the relevance of ICT management for the whole Group, the Company has a strategic role in:

- Implementing the ICT Strategic Plan to support the FS Group's Industrial Plan and defining, monitoring and controlling the multi-year ICT budget;
- Designing, developing, implementing and maintaining IT application systems, hardware and software infrastructures, data processing centres, digital services as well as any functional, organizational and process design activities, that are necessary for the best and most effective use of the infrastructures;
- Designing, implementing and managing information and related systems, structures, mobile and non-equipment and anything else necessary to meet the automation needs of the FS Group's companies, administrations, institutions, people, organizations, etc.;
- Purchasing, selling or handling industrial patents and inventions;
- Purchasing and reselling hardware, as well as software licenses;
- Creating, testing, selling systems, software products, technologies, digital services, tools and any other IT component, including the relative research activities and industrial and / or intellectual property rights;

Analysing, designing, implementing programs and application systems for automatic data processing, including buying, selling and trading the related industrial and / or intellectual property rights, as well as maintaining hardware equipment, including activities as hardware production.

