Making Europe’s transport smarter with innovative technologies
Making mobility smarter means improving the movement of citizens and the transport of goods on European roads and in cities. The implementation of Intelligent Transport Systems (ITS) makes mobility smarter through the use of technology and solutions that bring the benefits of digitalisation into the transport sector.
Integrating technologies in the everyday use of Europe’s transport system through ITS has already proven benefits. Some ITS applications that have already made improvements in transport are:

- **Advanced Driver Assistance Systems (ADAS)**, such as Emergency braking, lane-keeping systems, and Electronic Stability Control which saves 4,000 lives in Europe each year.

- **Electronic tachographs** that monitor driving and rest times of professional drivers to directly support enforcement of EU legislation and that contribute to road safety by identifying potential excessive driving hours, resulting in less tired drivers on European roads.

- **Navigation and location services** using space satellite technologies (GNSS) such as GPS and Galileo make driving safer and more efficient as both drivers and Traffic Management Centres have real time information on traffic conditions and up-to-date maps at their disposal. These ITS services save money and time for all users by reducing congestion.

- **Smart traffic lights** that communicate with navigation solutions that advise users on the optimal speed so that they can catch the ‘green light wave’. Such systems are proven to reduce pollutants and greenhouse gas emissions therefore improving air quality.

- **Real time information panels** at public transport bus stops or within buses increases user satisfaction within the public transport system by making travel more predictable.

- The provision of regular map updates on mobile and in vehicle devices based on standards agreed between public authorities and map providers. Maps that can be ‘read’ throughout Europe and by cross-brand systems are key to road-user’s safety and comfort. More informed drivers means increased safety for drivers, passengers and pedestrians.

- **Real time information for cargo booking slots** at ports and factories means reducing the “lost” time due to cargo trucks having to queue at the entrance to ports or other facilities. Knowing the Estimated Time of Arrival (ETA) in the logistics sector means being able to plan the route and resting times so that booking slots at ports can be carried out in real time.
ERTICO brings together the public and private sectors to make mobility safer, more sustainable and efficient. The ERTICO Partnership wishes to raise awareness of six areas of priority that are key for the digitalisation of transport in Europe.

Six Priority Pillars

1. MaaS (Mobility as a Service)

Importance for Europe

MaaS has the potential to reduce the number of kilometers driven by private cars by 50% and the amount of CO₂ emissions by 30% before 2050 in a scenario of accelerated use of shared mobility combined with public transport and the appropriate regulation.

Role of Policy Makers

The challenge currently faced by MaaS is to find the win-win that will encourage the public transport and private sector to collaborate with each other. Support for technical and operational interoperability and wide-scale piloting are the most important tools in facilitating the development of thriving multimodal MaaS ecosystems. To this end, the EU’s strong presence through different programmes and funding lines is invaluable for the future. In a digitalised mobility system data platform and booking, payment and ticketing systems should be seen as part of transport infrastructure. These systems and services should be modernised, by the allocation of appropriate EU funding, if needed, and they should become interoperable. Questions around data sharing and related business models have a direct impact on the viability of new services and should therefore be considered as an elemental part of transport policy. Establishment of a European strategy for the interoperability and compatibility of services from city to city and across borders will support positive developments and enhance European leadership within the industry.

Role of ERTICO

ERTICO will support and feed into the policy discussion on the understanding of needs and priorities of both the public and private sectors and how to enhance the integration of transport services and modes in order to create multimodal, user centric mobility models. This will eventually result in the full roaming of services within the mobility ecosystem, providing end-users with a similar level of freedom in cross-border mobility to that of using their own vehicles. ERTICO’s work on the technical and operational interoperability of mobility services is enhancing harmonisation at EU level and the competitiveness of European solutions. At the same time, ERTICO’s public and private Partners are already holding constructive workshops on understanding each other’s priorities.
## 2. Electro-mobility and renewable resources

### IMPORTANCE FOR EUROPE

Although hydrogen and biofuels-empowered mobility shows great potential, ITS is more prominently deployed in the field of electro-mobility. This does not mean that this technology is preferred to others but it indicates the higher level of application in this particular field. The shift from fossil fuel to electric power in road transport, when combined with renewable energy generation, advances the decarbonisation of transport. The success of electro-mobility strongly depends on interoperability and quality of service including easy access to charging and payment facilities. ITS facilitates seamless travel and data standards within the electro-mobility ecosystem to ensure wider acceptance by the user and to eliminate real and perceived barriers to using electric vehicles (EVs).

### ROLE OF POLICY MAKERS

More needs to be done at political level in order to remove the barriers that hold back the growth in electro-mobility by ensuring interoperability and quality of services. The overall life-cycle cost-benefit and environmental benefits of EVs can become clearer if coupled with different ownership models (shared vehicles, MaaS) and incentive-taxation-based models (pay-by-km for road use or emissions-related taxation instead of fixed registration taxes). There is also a need for harmonisation across Member States leading to a common interpretation of charging stations stipulated by national regulation. A user-friendly charging infrastructure needs to become available throughout the European Union. The current work by the European Commission on the Alternative Fueling Infrastructure Directive (AFID) is an important step towards empowering the EU Member States to plan for these charging facilities for both passenger cars and Heavy-Duty Vehicles (HDV).

### ROLE OF ERTICO

ERTICO, by using a multi-stakeholder approach in its research and innovation projects is working on solutions to promote seamless services, such as EV recharging, range optimisation, dynamic routing, etc. on longer-distance trips, including across borders, common protocols and business models for different service offerings for EVs, including light electric vehicles (e-bikes, micro-cars), for both long and short-distance trips for people and for freight (including urban logistics).

ERTICO is also cooperating with energy organisations on assessing how to best support the e-power storage for vehicles that currently depend on volatile supply. With smart charging, EVs can receive energy from charging stations and can also provide energy back to the grid, if needed.
3. Connected, Cooperative and Automated Mobility (CCAM)

IMPORTANCE FOR EUROPE

Connected, cooperative and automated vehicles have a strong potential to address many challenges in the transport sector and to improve the efficiency, safety, affordability and accessibility of mobility. Full benefits can only be achieved within an integrated environment where automated vehicles, road users and digital infrastructure connect and cooperate and can therefore make full use of the current and future deployed C-ITS and Mobility Services. Back-end automation in operation centres, as well as traffic management centres, facilitates capacity planning and management, including real-time identification and resolving of bottlenecks in the mobility network.

ROLE OF POLICY MAKERS

With the third mobility package, the European Commission has proposed measures to accelerate the introduction of advanced safety features in new vehicles, paving the way for the deployment of automated vehicle technologies. The related communication “On the Road to Automated Mobility” published in May 2018 has provided an EU agenda and defined supporting initiatives towards connected and automated mobility. The updated Strategic Transport Research and Innovation Agenda (STRIA) Roadmap on CCAM released in April 2019 has identified a series of Research and Innovation actions and the single EU wide CCAM platform to coordinate open road testing launched in June 2019 will ensure the cooperation among Automation in Road Transport stakeholders for the definition and set up of a coherent European Framework for the deployment of interoperable connected and automated driving in Europe.

Not only funding schemes, but also regulatory reforms at national, European and international level need to be enacted so that barriers for consistent European and international rules on traffic management and mobility network operations, in particular for the transition phase from conventional to the CCAM phase, can serve as a basis for multi-stakeholder cooperation. Unless safety is guaranteed, user acceptance will remain low.

ROLE OF ERTICO

ERTICO will continue working with automotive and ITS technology stakeholders, the public sector and research organisations in supporting the coordination of CCAM related research and pilot activities in Europe, updating related roadmaps and identifying priorities for decision makers on deployment. ERTICO will also intensify this collaboration with these stakeholders on further enhancing the safety of automated and connected vehicles and provide technical training for public authorities and promote user acceptance through awareness activities.
4. Urban air mobility

IMPORTANCE FOR EUROPE

Urban Air Mobility solutions, such as drones, are currently being developed by industry in response to needs for new services both for urban logistics and passenger transport. Drones are not only used in traffic monitoring and emergency services, but also extend to improving traffic conditions and bridging the gap of fast and efficient transportation across congested districts or areas without infrastructure.

ROLE OF POLICY MAKERS

To unlock the expected benefits in urban air mobility, integration of urban air mobility vehicles into existing ground transport systems and services is a necessity. Cities should be considered as the key stakeholder when developing urban air mobility solutions, and traffic management should be expanded beyond ground transportation (as it should include all possible modes). These efforts can be supported with an appropriate European regulatory framework with clear roles and responsibilities. Safety and security should remain priorities.

ROLE OF ERTICO

ERTICO will support cities to gain capabilities for integrating this new aerial dimension in their urban mobility system. Taking mobility to the next level, drones can provide new impetus to both passenger and goods transport-related business schemes (taxi) as well as to pure traffic management (monitoring and incident inspection). ERTICO is working with its Partners on identifying and deploying such schemes.
5. Traffic efficiency

IMPORTANCE FOR EUROPE

ITS is paramount for traffic efficiency. The dissemination of traffic information in real time via in-vehicle devices as well as the management and planning of traffic by public authorities can now be based on cooperation between the private and public sectors. Private service providers can provide information on the real positioning of vehicles on the mobility network with ITS services and products such as navigation and routing as well as vehicle to infrastructure (V2I) communication protocols. Time and costs are saved for all users of the mobility network and public authorities can work on optimising their road capacity.

ROLE OF POLICY MAKERS

In holistic traffic management (TM 2.0), the cooperation of public authorities, private service providers and road users assists in optimising monitoring and managing traffic flow. This successfully prioritises the public interest and other policy objectives and ensures safety on the road. Connected and informed mobility network users can anticipate unsafe situations and work collectively towards optimising the use of the mobility network as a whole. Decision makers should facilitate and successfully incentivise the cooperation of the public and private sectors in traffic management encouraging the understanding of each other’s priorities and needs and call for more dialogue between the two. As the coordination of the traffic management system always remains with the public authority, this is an opportunity to cater for both the public good and the private (business or user) interest at the same time.

ROLE OF ERTICO

ERTICO continuously supports all traffic stakeholders in establishing cooperative public-private schemes that will satisfy the objectives that each stakeholder wishes to attain, whilst keeping user needs in focus. By analysing business models that are based on the win-win principle, ERTICO provides the framework in which such traffic management partnerships can be deployed. When users’ needs are balanced with those of the collective, road network capacity can be optimised and traffic can flow with no disruption or interference.
6. Innovation driven re-regulation and governance

IMPORTANCE FOR EUROPE

A new mobility landscape is emerging and regulation has an important role to play in preventing fragmentation, encouraging the deployment of advanced solutions and ensuring safety, efficiency and social inclusion. Mobility-related policy and regulation should be used to facilitate innovation and to establish a level playing-field for a variety of mobility solutions. When considering new regulation, technology-neutrality should be embraced. Regulating for individual mobility modes without taking into account the vision of seamless multimodal mobility system should be avoided. Similarly, mobility industries, such as automation or alternatively powered mobility, should not be addressed in silos but instead they should be recognised as integrated parts of mobility. Impacts should be evaluated from the end-user perspective, paying attention also to affordability and inclusion.

ROLE OF POLICY MAKERS

To stimulate new innovation, mobility services and models, it is essential to involve market newcomers, SMEs and start-ups in stakeholder consultations. Mobility-related pilots and experiments and establishment of ‘living labs’ are useful tools to stress-test the appropriateness of both innovation and related regulation. Industry needs to be supported with opportunities to test and pilot innovative solutions before regulation is enacted. This is equally important for consumers to gain confidence and for the public authorities who wish to be reassured of the safety of these solutions for the public.

ROLE OF ERTICO

In policymaking a multi-stakeholder approach and structure is necessary and different stakeholders need to work towards attaining the common goal to create better interoperable governance beyond administrative silos and layers. ERTICO is optimally positioned to establish cooperation models towards innovative ITS solutions and products that render the win-win of the private and public sector in mobility as a basis for success and further cooperation. Through its activities and projects, ERTICO assures this cooperation by testing and piloting innovation for Europe.
Taking into account the growing importance of connectivity and the need for the exchange and sharing of data increases the engagement of mobility stakeholders to collaborate and benefit from Co-creation (the creation of new services and business models by the mobility stakeholders based on the expressed needs of users) and Co-petition (the cooperation of competitors in mobility for a mutual benefit or common good). Both co-creation and co-petition are instrumental for mobility as they bring a change in public-private sector behaviour towards the provision of mobility services for users. With co-creation, all stakeholders in mobility are invited to have a role in creating policies, services and products that will answer the needs of users and the society as a whole in mobility, while co-petition, establishes cooperation among competitors in the private sector so that a common societal benefit can be attained.

Cooperation, connectivity, and automation are not only complementary, but they reinforce each other and will over time merge completely. Communication between vehicles, infrastructure and other road users is crucial to increase the safety of future automated vehicles and their full integration in the overall transport system and thus mobility infrastructure is not anymore only physical, but also digital. As the shift towards fully automated mobility systems is taking place, the duality of the physical and digital infrastructure is an absolute necessity, and this can be facilitated by ITS.

IoT is forming the core of the rapidly growing digital economy. By 2025, over 70 billion devices are expected to be connected over IoT with a predicted economic impact of 10 trillion euros. IoT’s unique common system architecture allows managing Big Data sets to create a data marketplace that would allow the deployment of Smart Mobility services in an integrated Smart Cities context. A more and more integrated and interrelated mobility system which evolves, through CCAM and the use of its enabling technologies (e.g. IoT, AI, 5G), to what is now called the Internet of Mobility needs a firm basis of understanding and agreement amongst its stakeholders. The digitalisation of the mobility infrastructure takes into account safety and cybersecurity and translates physical attributes to digital sensors and in-vehicle receivers so that both conventional vehicles (also called ‘legacy vehicles’) and autonomous ones can make optimal use of the infrastructure.

At the same time, mobility services are now designed with a user-centric multi-modal approach. These will, to a larger extent, be integrated with user-orientated services from other sectors. The transport, digital, energy infrastructures combined and integrated into one holistic approach that ‘sees’ its operations from a cross-sectoral perspective is critical in attaining the objectives of safety, efficiency and sustainability.
ERTICO has front-runner insights into the development needs of the physical and digital infrastructure needed for smart mobility solutions. Implementing and operating cross-border mobility systems and service across multi-vendor platforms in Europe is dependent on interoperability at system, application and service levels. The ERTICO Partnership works on identifying standardisation needs in the targeted mobility domains and related horizontal technology areas. In contributing towards the establishment of harmonised ITS standards for road authorities and service providers, ERTICO works closely with standardisation bodies to ensure the deployment of interoperable ITS systems.

ERTICO works towards making Europe’s mobility clean, connected and integrated.

**ERTICO Partnership**

**Driving forward ITS in Europe**

ERTICO brings together the private and public sector to make mobility safer, more sustainable and efficient. ERTICO, together with its 120 Partners, develops, promotes and deploys smart mobility solutions and services for the benefit of all. Since 1991, ERTICO has coordinated and worked on numerous smart mobility European projects, organised 38 ITS European and World Congresses and has played a central role in public consultations and in contributing to policy agendas, and established long-term relations with key players in Europe, United States of America, Japan, Russia, and China. ERTICO connects public authorities, industry players, infrastructure operators, users, national ITS associations and other organisations to innovate together for tomorrow’s journey.