The future is now!

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Do you remember when you had to rely on paper maps on your car rides? Or when you had to queue in different kiosks to buy your printed-out public transport tickets? Or when you sent a box and couldn't access tracking information on the location and state of your precious belongings? The answer "no" brings just some examples of how Intelligent Transport Systems (ITS) have impacted people's mobility and the transport of goods.

However, this is just the start of a process that will deeply change our transport networks. Online shopping and decentralised delivery of goods increase the pressure on existing infrastructures. In this context, ICT technologies contribute to co-modality, improve infrastructure, traffic and fleet management and allow for better tracking and tracing of goods. ITS is also responsible for eFreight, whereby "en route" information of transported goods is made available online.

Photo: City of Vantaa

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Key asset for change

On another level, cities are expected to grow and transportation infrastructures are in some cases already at their limits. Expanding infrastructure does not represent a long-term solution against traffic congestion. In addition, space is limited and the dominance of asphalt over green or pedestrian areas plays against the quality of life of city dwellers. In their search for alternative solutions, local authorities are turning their eyes towards ITS.

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From applications for finding available parking spaces, which will increasingly be further away from the city centre, to real-time intermodal travel information and contactless payment systems, there is a wide range of technologies and applications challenging the traditional concept of transport. This is turning rigid transport models into increasingly multimodal, integrated mobility services that could, in the future, converge in the shape of targeted mobility packages encompassing all relevant means of transport.

Even when this trend seems to be unstoppable and there are already many uses for ITS running in Europe, fragmentation and a lack of common standards block the wide-scale deployment of some of these technologies. This is where ERTICO ITS Europe comes in.

Bridging the interest of public and private stakeholders

ERTICO is the acronym of a tongue twister: European Road Transport Telematics Implementation Coordination. Behind this acronym is a big umbrella organisation under which 116 companies and institutions from all over Europe gather. Their joint efforts are oriented to achieve smart, safe and seamless mobility.

These span from the actions to raise awareness about the potential benefits of ITS, to those carried out in order to develop, test and facilitate the roll-out of such technologies in the real world. Such overarching objectives require work on many fronts. That is why this year ERTICO has identified five core ITS programmes around which its activities will be structured as connected and automated driving, eMobility, Emergency Call, ITS for Freight Transport and Logistics, and ITS for Urban Mobility.

Moreover, ERTICO is one of the organisers of the ITS Congresses, celebrated yearly in Europe and in one major city in Asia and the Americas. The ITS World Congress represents a great opportunity for public authorities and top level executives to meet each other and to discover the latest developments on ITS. This year's edition, celebrated in Bordeaux from October 5th-9th, focused on 'better use of space' and on how cities can use legacy infrastructure in the smartest way thanks to ITS.

Connected vehicles and Cooperative ITS

Jules Verne narrated an exciting trip of 20,000 leagues under the sea on-board *Nautilus*, a huge electric submarine. His novel was published in 1870, a time when such means of transport seemed no more than fantasy. Years later, in 1884, the first all-electric submarine was underwater.

Self-driving vehicles are also a common theme in science fiction novels. However, thanks to more than 30 years of research and some pilot projects running, they are now closer to hitting the road.

Connected cars, partially or fully automated, are closer to computers on wheels than to the mechanical systems imagined by Henry Ford. They are expected to increase safety and improve traffic flows by cooperating among themselves and with the surrounding infrastructure. Through communication, automated vehicles can implement platoon operations, or cooperate with the infrastructure to improve the flow of traffic by variable speed limits or intersection management.

Cooperative automatic vehicles can also be applied to public transport in dedicated areas where public transport is not available, transporting travellers to the closest metro, bus or tram stop. The European project CityMobil-2 has demonstrated such cooperative vehicles in five cities.

Self-driving vehicles will probably trigger profound changes on urban life and they might erase the distinction between public and private transport. Thus, the car that takes you to work in the morning can then, instead of staying in a parking lot, take someone else in your family, neighbourhood or city somewhere else. And this is just one example of its potential benefits!

As ITS systems rely on the collection, use and process of data from different sources, including from the vehicle itself, they also

raise the challenge of data protection and how to shield the vehicles from potential hackers. Legislation must be adapted and technologies secured until completely autonomous vehicles go all the way from fantasy to reality. Until this moment arrives, we need technology that enhances human drivers' abilities.

ITS for greener and more efficient transport

The United Nations expects to reach a new international climate change agreement that will cover all countries at the Paris Climate Conference in December. The EU's contribution to the new agreement will be a binding domestic greenhouse gas emissions reduction target of at least 40% by 2030.


Photo: Compass4D

As road transport contributes to about one-fifth of the EU's total emissions of carbon dioxide, ITS has an important role to play in order to achieve this ambitious target. Along these lines, ERTICO released a study on September 16th, supported by the European Automobile Manufacturers' Association (ACEA), on the potential contribution of ITS to reducing CO_2 emissions for passenger cars.

This study revealed, for example, that in-vehicle eco-navigation systems have a 5-10% emissions reduction potential. Eco-driving systems – which recognise driving behaviour and provide the driver with on-trip advice and post-trip feedback – can bring down emissions by 5-20%.

Regarding infrastructure, giving drivers real-time advice on traffic signals and guidance to find a parking space could lead to 10% savings in CO_2 emissions.

Compass4D, a success story

Hundreds of drivers of busses, taxis, trucks, emergency and private vehicles have been using Compass4D pilot services for one year to prove that C-ITS systems can increase drivers' safety and comfort by reducing the number and severity of road accidents and traffic congestion.

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Compass4D is a European Union co-funded project, which focuses on a pilot deployment of three cooperative ITS (C-ITS) services in seven European cities. Thanks to ITS-G5 communications and 3G/LTE technologies, the devices on-board vehicles are able to communicate with surrounding road infrastructure. Eventually, this has had a positive impact on the local environment by reducing CO_2 emissions and fuel consumption.

And here comes the success story: The proven benefits of the C-ITS services piloted by Compass4D convinced the seven pilot sites, as well as other local and regional authorities, to invest in road safety, energy efficiency and congestion reducing measures tested by Compass4D beyond the project's lifetime.

As was stated before, the ITS systems are expected to play an even the bigger role in the future than they do nowadays. They have already marked their presence significantly; by the same token, today's impossibility may become part of a daily routine tomorrow. ■