Intelligent Transport Systems (ITS) are promoted by the European Union as a way to increase road safety and tackle Europe’s growing emission and congestion problems. In this event report, EURACTIV looks at where the EU stands with ITS deployment, and identifies the roadblocks still lying ahead.
Digital solutions can stem the economic toll of road congestion, official says

EU official: Road digitalisation will lead to safer and greener highways

The CEF ITS Corridors and the European ITS Platform contributing to the Green Deal and the Digitalisation challenges
Digitalising European roads will save lives, reduce harmful polluting emissions, and cut down the “pure economic waste” caused by traffic congestion, according to an EU official.

His comments came on Thursday (25 March), at an event exploring the future of road digitalisation in the EU.

Applying Intelligent Transport Systems on European highways have led to at least 75 fewer fatalities and prevented thousands of road accidents, participants heard.

Around 1.2 million hours that would have been lost to congestion were also saved.

The Ursa Major corridor, which runs from the Netherlands through Germany to the south of Italy, was digitised to improve the flow of freight traffic, resulting in a 13% reduction in journey times and a 22% drop in carbon emissions.

“We can see that for the combined investment of just over €230 million, annual safety and socio-economic savings are around €55 million, which would mean an overall average return on investment of around four years,”
said Daniel Cullern, a consultant who spoke on behalf of Highways England, an organisation involved in the digitalisation project.

“This just goes to underline the impact of those ITS services,” he added.

ITS use information and communication technologies, such as sensors and satellites, to better monitor roads. The data generated can make roads more efficient by alerting drivers to bottlenecks, regulating traffic lights, and instantly contacting emergency services if a crash occurs.

Advances in data connectivity and artificial intelligence have opened up mobility solutions that would have been considered "fantasies" years ago, said Hedberg.

However, greater harmonisation of ITS systems across Europe, such as data standardisation and the extension of digital infrastructure, is needed to ensure a seamless service for road users and to prepare for autonomous vehicles.

"Get ready for the next revolution," said Vito Mauro, a member of the national Italian observatory on smart roads. "We cannot ignore the potential impact of automated and connected cars, the impact that these things will have on our lives and on transportation."

"Automation is coming and we have to find a way to cooperate before this is imposed on us," added Dr. Johanna Tzanidaki of the mobility service organisation ERTICO.

Surely, there will be teething problems associated with deployment of digital infrastructure. One of them is the "high challenges" of managing roads with mixed driver and driverless traffic, said Malika Seddi, CEO of the European Association of Operators of Toll Road Infrastructure.

On the issue of funding the roll-out of ITS infrastructure, the European Commission’s Pierpaolo Tona said the Connecting Europe Facility, which aims to improve transport and digital links between EU countries, is ideally placed to offer financial support.

CEF is expected to be officially approved in the coming weeks following an informal trialogue agreement between the European Parliament and European Council. Once passed, it will unlock over €30 billion for smart and sustainable transport and energy projects.
Intelligent Transport Systems have the potential to increase road safety and efficiency, cutting emissions and saving lives, says Pierpaolo Tona.

Pierpaolo Tona is a senior project manager with the Innovation and Networks Executive Agency (INEA), a body established by the European Commission to manage specialised projects. He answered EURACTIV’s questions in writing.

Intelligent transport systems (ITS) have been touted as a way to make transport safer and more efficient. How does it work in practice?

ITS are information and communication technologies (ICT) applied to transport, for example to road infrastructure and vehicles, traffic management, and mobility services. They rely on computers, electronics, sensors, telecommunications, and satellites. Hardware is installed in the road infrastructure and, depending on the type of service, also on the vehicles.

ITS allow to adjust road traffic to varying circumstances, flexibly adapting to changes in flows and unforeseen events. Lanes on a motorway can, for instance, be used in different ways, or a traffic light can immediately turn to green when a bus is approaching.

In terms of sustainability, what impact will ITS have on road emissions?

ITS reduce the number of road accidents and congestion, with traffic flow therefore more regular...
and efficient. As an example, I can mention the results of one of the ITS Corridors co-funded by the Connecting Europe Facility (CEF), which showed a decrease of 34% in the number of accidents, of 13% in average journey duration, and of 22% in CO2 emissions. I find these achievements remarkable.

**What are the costs of implementing such types of systems? How can member states fund their implementation?**

First of all, I think it is important to mention that ITS have the capacity to do more with less, compared to building new roads or upgrading existing ones. This is particularly relevant in Europe, where the space available to build or expand road infrastructure is relatively limited. It means that, instead of building or enlarging roads, we make more efficient use of the existing ones. Thus, ITS bring not only more efficient and safer transport, but also more efficient use of public resources.

When we look at costs, the four ITS Corridors funded by CEF showed an overall return on investment of about 4 years, as the combined investment of €232 million produced annual benefits of €55 million.

Furthermore, ITS implementation is supported by the EU, which means EU member states can count on significant financial support. It is worth noting that more than half a billion euros of CEF funding were spent on ITS.

I can say that we received very positive feedback from member states regarding the support they received from CEF, which goes beyond the financial element, as CEF encourages cooperation among countries and ensures interoperability across borders.

**Will ITS be used to facilitate the Eurovignette tolling system? And how does the European Commission intend to make sure that ITS systems implemented across Europe are compatible with each other?**

ITS is not serving the Eurovignette. There were ITS projects in the past, funded by the TEN-T programme, on European tolling systems. They showed that work is still needed at different levels to implement an efficient Electronic Toll Service, as it is not just a technical issue.

As vehicles are crossing borders, ITS will not be useful if technical and operational interoperability is not ensured across the EU. Road users should always experience a seamless journey with continuity of services. We have very positive examples in this regard, such as the DATEX II data exchange standard used by the European Traffic Management Centres, or the ITS-G5 communication standard used for C-ITS.

**Will ITS roll out impose extra costs on road users?**

ITS projects funded by CEF are focused on road safety and the efficiency of transport, not to impose extra costs on road users. The gantries on the highways, for example, are supported by the EU to provide information to road users (for instance real-time traffic information, speed advice, speed limits, travel time, availability of truck parking, re-routing recommendations) via large boards called “variable message signs”.

**Some have raised privacy concerns about ITS, saying they will enable the tracking of people’s movements. How can those concerns be addressed?**

Privacy is a legitimate concern for all of us. The EU is among the most advanced regions in the world in the field of data protection, and ITS make no exception. As an example, I recall the strict requirements imposed by the European Data Protection Supervisors when working on the implementation of eCall, one of the successful examples of ITS services. It is not by chance that the eCall system is based on the 112 emergency number and the SIM card inside the vehicles is dormant (i.e. not able to track the position of the vehicle before a severe accident). Another evidence of the extreme attention to data protection is the privacy working group of the C-ITS Platform established by the European Commission.

**Is ITS a prerequisite for the next generation of automated vehicles? Should there be a deadline for all EU countries to implement an ITS?**

Without any doubt, ITS contribute significantly to the gradual automation of transport. All vehicles rely more and more on communication and data exchange (with other vehicles as well as the infrastructure). More ITS means also more secure and trusted data exchange, which will ultimately lead to easier implementation of automation in transport.

However, automation is not directly connected to the mandatory implementation of ITS. This is currently limited to basic ITS services which derive from the ITS Directive 2010/40/EU.
The European Union activated an ambitious plan on two of the most fundamental subjects for the life of its citizens, namely the Green Deal and the Digital Strategy. Global climate change can put at risk the quality of life of the people, whilst the rapid introduction of digital services should, and can, bring big benefits. However, it implies also big risks for the security of all the business sectors, and for the privacy of the citizens.

The European plan aims at maximizing the potential benefits and preventing unwanted consequences. The transport sector is actually a very important part of the two initiatives since it is a big generator of emissions in the atmosphere and on the other hand, it is a sector with a very high potential for the application of digital services. In this framework implementations in ITS corridors are able to concretely contribute to the objectives of European common interest. Also, the European ITS Platform is connecting the real world ITS implementations of its members, the European Road operators and their partners, with the European strategy. This is realized by framing the results, allowing for verifiable assessment of the result and providing the instrument connecting the EU plans with the operational layers.

The experience and ex-post figures show that the digitalisation

Continued on Page 9
provided through ITS in road traffic and transport is reducing travel times, bottlenecks, incidents, accidents, queues, and break-downs. Therefore digitalisation is reducing the emission to the minimum level actually needed for undisturbed traffic and transport in a safe way. Digitalisation is being introduced and needs the utmost care regarding the correct treatment of the citizens’ personal data, to prevent identity violations and thefts, but also with due attention to the security of the systems in order to prevent any possibility of hacking through a security breach. In these efforts, the perhaps most valuable asset of the CEF ITS Corridors and the European ITS Platform is the cooperation among its business and institutional partners, encompassing the diversity of the European actors and demonstrating the huge benefits of such a cooperation.

BACKGROUND

DG MOVE, INEA and European road authorities have been working together for several years to implement ITS systems and services in response to the ITS Directive 2010/40/EU, in particular the wider deployment of Safety-Related Traffic Information (SRTI) and Real-Time Traffic Information (RTTI), better traffic management and services relating to the freight industry. This has been achieved through the formation of five ‘ITS Corridors’ which comprise largely linear stretches of the trans-European Core and Comprehensive networks. The European ITS Platform (https://www.its-platform.eu/) prepared this short piece to highlight some of the results achieved by ITS corridors Arc Atlantique, MedTIS, Next-ITS and URSA MAJOR.

LESSON LEARNT AND VISION

On top of the hard infrastructures of the Core Network Corridors, CNC’s, and the comprehensive TEN-T network, measures and services for their optimal use are essential. Those services will provide better performance of those hard infrastructures, higher throughput, fewer queues, better safety, and lower environmental impact and carbon footprint. Further, when harmonized, they’ll cater for cross-border seamlessness of the corridor and enhance its multimodal use. Those services, both public and private, are always based on data, communication and information. For roads and the interfaces to other modes, we call them Intelligent Transport Services, ITS. One more important feature of ITS is that it is easier and quicker to implement than expanding the basic hard infrastructures, raising their performance at a considerably lower cost.

With new policies for the coming decade, viz. the Green Deal and Digital Europe, the digitalisation of the Core Network Corridors, and also transport as a whole, including the urban environment, will be prioritised. The so-called ITS corridors already cover most of the CNC’s and with the experience, built-in EU EIP will be a solid base for helping to realise the digitalisation of CNCs, wider networks and hubs. Collaboration with and coverage of the CNC’s will be intensified to create the digital backbone and services which will make them perform in an optimal and integral way. With higher interests and investments in the coming years, the efforts on evaluation need to be sustained and extended to provide evidence that investments in digitalisation are sound. More projects need to be evaluated to build that body of evidence, and further methodology on extrapolating project performance into a corridor or network performance will be required. That way the merging of digitalisation and infrastructure, “making better use of existing infrastructures”, and the realisation of the Single European Transport Area by facilitating multimodal use can best be warranted.

GENERAL BENEFITS

Based on available results from the ITS corridors, pan-corridor estimated global minimum 5-year safety benefits and return on investment (ROI) have been calculated. In terms of minimum safety-related socio-economic savings as a result of a combined programme investments over a 5-year period, it can be concluded that:

- A minimum of 75 lives will be saved
- A minimum of 2,166 injuries will be prevented

In conclusion, as a result of these safety benefits alone, it is apparent that the combined ITS Corridor investments also result in a high financial benefit. Based on the combined investment of 232 Million € across the 4 ITS corridors, the following minimum savings based on safety impacts alone can be established:

- A minimum annual safety benefit saving of 55 Million €
- A minimum overall Return on Investment (ROI) of about 4 years on average
- A benefit-cost ratio of around 3 and higher (based on an average lifetime of 10 years for the related infrastructure components).