COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

A European strategy on Cooperative Intelligent Transport Systems, a milestone towards cooperative, connected and automated mobility

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1. INTRODUCTION

Profound change lies ahead for the transport sector; both in Europe and in other parts of the world. A wave of technological innovation and disruptive business models has led to a growing demand for new mobility services. At the same time, the sector is responding to the pressing need to make transport safer, more efficient and sustainable. The resulting transformation creates huge social and economic opportunities that Europe must seize now, to reap the benefits for its citizens and businesses.

Digital technologies are one, if not the strongest, driver and enabler of this process. Exchanging data between different actors in the transport system means supply and demand can be matched in real time, leading to a more efficient use of resources, be it a shared car, a container or a rail network. Digital technologies help reduce human error, by far the greatest source of accidents in transport. They can also create a truly multimodal transport system integrating all modes of transport into one mobility service, allowing people and cargo to travel smoothly from door to door. And they can spur social innovation and ensure mobility for all, with the emergence of new players and new forms of value creation such as the collaborative economy.

The potential of digital technologies and related business models in road transport is significant, and so is the need to act. The steady and positive trend in road safety that the EU has seen over the last decade has slowed down. Road transport is still responsible for the bulk of transport emissions, in terms of greenhouse gases and air pollutants[1,2]. Every day, congested roads are a huge cost to the EU economy[3]. With the jobs of millions of Europeans depending directly or indirectly on the automotive and transport industry, it is critical that the sector be provided with the conditions to stay in the lead globally.

This Communication is thus closely linked to the Commission's political priorities, notably its Agenda for Jobs, Growth and Investment, the Digital Single Market and the Energy Union Strategy[4]. The European Strategy for Low-Emission Mobility[2] adopted in July 2016, highlights the potential of cooperative, connected and automated vehicles to reduce energy consumption and emissions from transport. The Digitising European Industry Strategy[5] identifies cooperative, connected and automated vehicles as a priority topic for boosting the competitiveness of European industry. Studies have estimated the market potential of cooperative, connected and automated driving to be worth dozens of billions of euro annually and the creation of jobs could run into the hundreds of thousands[6].

In many respects today's vehicles are already connected devices. However, in the very near future they will also interact directly with each other and with the road infrastructure. This interaction is the domain of Cooperative Intelligent Transport Systems (C-ITS), which will allow road users and traffic managers to share and use information previously not available

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[1] Over 70% of transport greenhouse gas emissions, 39% of NO_x and 13% of particulate matter

[2] A European Strategy for Low-Emission Mobility, COM(2016) 501 final

[3] Overall congestion costs are currently estimated at 1% of GDP (EC JRC, 2012)

[4] A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy - COM(2015) 80 final, ANNEX 1

[5] Digitising European Industry - COM(2016) 180, SWD(2016) 110

[6] Roland Berger, autonomous driving, Think:Act, December 2014
  AT Kearney, Roadmap towards Autonomous Driving, September 2015
  KPMG, Connected and autonomous vehicles - the UK economic opportunity, March 2015
  Strategy&, Connected car report 2016: Opportunities, risk, and turmoil on the road to autonomous vehicles, September 2016.

and to coordinate their actions. This cooperative element[7] – enabled by digital connectivity – is expected to significantly improve road safety, traffic efficiency and comfort of driving, by helping the driver to take the right decisions and adapt to the traffic situation.

Communication between vehicles, infrastructure and with other road users is crucial also to increase the safety of automated vehicles and their full integration into the overall transport system. Cooperation, connectivity, and automation are not only complementary technologies, they reinforce each other and will over time merge completely. Truck platooning (trucks communicating to automatically and safely follow each other at very short distance) is a good example: connectivity, cooperation and automation must all come together to make it work. But even more so will cooperation be needed when future automated vehicles have to negotiate much more complex traffic situations safely and efficiently.

Countries around the world (e.g. US, Australia, Japan, Korea and China) are moving rapidly towards deploying digital technologies, and in some countries vehicles and C-ITS services are already available on the market. G7 transport ministers[8] have repeatedly underlined the need for action. Several Member States have started C-ITS deployment activities under real life conditions through strategic alliances such as the EU cooperative corridor[9] linking Rotterdam to Frankfurt and Vienna, or the Amsterdam Group[10]. The Space Strategy for Europe[11] underlines the need to encourage integrating space technologies into strategies addressing connected cars, whilst benefiting in particular from the use of GALILEO and EGNOS.

In the Declaration of Amsterdam[12] in April 2016, European transport ministers urged the European Commission to develop a European strategy on cooperative, connected and automated vehicles. Equally importantly, industry stated its intention to start full scale deployment of C-ITS enabled vehicles in 2019.[13] But for this to happen, coordination is urgently needed at European level.

With technology rapidly evolving and the public and private sector investing substantial amounts into developing and testing C-ITS technologies, there is a risk that, without a framework at European level, EU-wide interoperability will not be achieved on time. This would put European industry at a disadvantage to its competitors and delay the deployment of C-ITS in Europe, and with it the multiple benefits for transport and society at large.

This Communication presents an EU strategy for the coordinated deployment of C-ITS in order to avoid a fragmented internal market in the field of C-ITS and create synergies between different initiatives. It addresses the most critical issues, including cyber-security and data protection (both particularly important for public acceptance) and interoperability and recommends action at different levels to meet the 2019 target date. This Communication

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[7] Cooperation means that vehicles warn each other of potentially dangerous situations (e.g. emergency braking or end of traffic jam queue) and communicate with local road infrastructure (e.g. traffic lights for optimal speed advice). Also, two-way communication between vehicles and traffic control centres allows detecting problems faster (e.g. traffic jams or black ice) and mitigating their effects by giving road users better advice faster.

[8] G7 meeting in Germany, September 2015: G7 Declaration on automated and connected driving
  G7 meeting in Japan, September 2016: G7 Declaration on Development and Widespread Utilization of
  Advanced Technology for Vehicles and Roads

[9] Cooperative ITS Corridor Rotterdam – Frankfurt/M. – Vienna

[10] Amsterdam Group: an alliance between road authorities (European Association of Operators of Toll Road Infrastructures, Conference of European Directors of Roads), cities active in POLIS (Network of European cities and regions) and the vehicle industry organised in the Car2Car Communication Consortium

[11] Space Strategy for Europe, COM(2016)705

[12] Declaration of Amsterdam on cooperation in the field of connected and automated driving, 14 April 2016

[13] Car2Car Communication Consortium Press Releases, October 2015

thereby constitutes an important milestone of an EU strategy on cooperative, connected and automated vehicles.

2. EUROPEAN ACTIVITIES TO ENABLE DEPLOYMENT OF COOPERATIVE, CONNECTED AND AUTOMATED MOBILITY

This Communication is the result of intensive work with experts from both the public and private sectors. Since November 2014, the Commission has hosted the C-ITS platform[14] to identify remaining barriers and propose solutions for C-ITS deployment in Europe. The first phase of the C-ITS platform resulted in an expert report[15], unanimously endorsed by the platform participants in January 2016. The expert report was complemented by a Cost Benefit Analysis[16] and a public consultation[17] which together have laid the groundwork for this Communication. Meanwhile, the C-ITS platform started its second phase in July 2016.

The EU has already made substantial funding[18] available for cooperative, connected and automated vehicles. For more than 15 years, research and deployment projects have proved the feasibility of C-ITS services. More recently under Horizon 2020, research into Intelligent Transport Systems has shifted focus to the integration of transport modes and the links with automation. A dedicated call for project proposals on automated road transport was launched in 2016. In the context of the Strategic Transport Research and Innovation Agenda, the Commission is developing a roadmap on connected and automated transport to steer and coordinate future R&I activities in Europe. This work is complemented by large-scale deployment projects to develop cooperative systems on the Trans-European Transport network in 13 countries,[19] making use of EU funding programmes such as the Connecting Europe Facility (CEF).

On the policy for highly automated and connected vehicles, a number of Member States' authorities, NGOs and industry stakeholders are cooperating with the relevant Commissioners within GEAR 2030, a High Level Group set up October 2015 to look at the future of the automotive sector. The results of the C-ITS platform will feed into GEAR 2030, providing it with a transport system perspective. The goal of the group is to present first recommendations by the end of 2016 with final recommendations by mid-2017.

A high-level dialogue, in the form of industry Roundtables involving the telecom and vehicle manufacturing industry, was launched in autumn 2015 to develop synergies in the area of connected and automated vehicles. This dialogue is expected to help the automotive sector take advantage of digital developments such as the Internet of Things, Big Data, the telecoms policy and digitalisation of industry, and has already resulted in a commitment from both industries to form new alliances and start experimenting with 5G technologies.

As referred to in the 2017 Commission Work Programme the Commission will continue working on the regulatory environment, ecosystem-building, resource efficiency and

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[14] The Platform for the Deployment of C-ITS in the European Union (C-ITS Platform - launched in November 2014 as a Commission Expert Group) provides an operational instrument for dialogue, exchange of technical knowledge and cooperation amongst the Commission, public stakeholders from Member States, local/regional authorities and private stakeholders such as e.g. vehicle manufacturers, equipment manufacturers, road operators, telecom operators and service providers.

[15] Final Report of the C-ITS Platform, January 2016

[16] Study on the Deployment of C-ITS in Europe: Final Report, February 2016

[17] Analysis of responses to the public consultation on C-ITS (DG MOVE, open June - September 2016)

[18] EU co-funding of over 130 Million EUR alone since 2014 through CEF and H2020 on the topic of cooperative, connected and automated vehicles

[19] AT, BE, CZ, DE, DK, ES, FI, FR, NL, NO, SE, SI, UK

standardisation to facilitate the market introduction of increasingly efficient cooperative, connected and automated vehicles.

Building on these initiatives, an unprecedented level of cooperation across many sectors is required to make C-ITS deployment a success. Roles and responsibilities along the value chain are blurring, putting into question existing concepts. To avoid possible rebound effects, such as a net increase in traffic and emissions, close cooperation with local authorities is necessary. For example, to integrate cooperative, connected and automated vehicles into sustainable mobility planning or the concept of 'Mobility as a Service', including public transport and active travel modes such as walking and cycling. To ensure wide acceptance of C-ITS technologies and maximise their economic and social impact, citizen involvement is key and C-ITS deployment should focus on the user.

A digital transport system requires thinking in horizontal layers, cutting across different transport modes and industries, rather than in vertical silos (such as transport, energy or telecommunication). The focus can no longer be on the infrastructure layer alone (for instance roads and vehicles). Digital technologies also build on a data layer which contains both static data such as digital maps or traffic regulations and dynamic data such as real-time traffic information. These data are then used to develop a layer of innovative services and applications, which are made available over a layer of networks. To make best use of digital technologies, market access and fair competition in each of these layers needs to be ensured, as recommended by the Commission Communication on online platforms.[20]

3. THE WAY TOWARDS C-ITS DEPLOYMENT IN 2019

Following the recommendations of the C-ITS Platform,[21] the Commission has identified issues which should be tackled at EU level to ensure coordinated deployment of C-ITS services in 2019. The following chapters propose specific action to address each issue, including enabling conditions at European, Member State, public authority and industry level.

3.1. Priorities for deployment of C-ITS Services

Continuity of service, i.e. the availability of C-ITS services across the EU for end-users, is the most important factor for swift deployment of C-ITS in Europe. From the start, the services deployed should be as widely available as possible, both on the side of infrastructure and vehicles. Therefore, this Communication sets priorities for a coordinated deployment of C-ITS services by Member States and industry.

At the Commission's request, the C-ITS platform has analysed the costs and benefits of deploying C-ITS enabled services for road transport in the Member States.[16] To this end the Platform discussed the most promising deployment scenarios in terms of rapid and widespread uptake.

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[20] Online Platforms and the Digital Single Market Opportunities and Challenges for Europe, COM(2016) 288
[21] According to the final report of the C-ITS Platform these are:
- a 'Day 1'list of commonly agreed C-ITS services for deployment across the EU;
- a common vision to tackle cyber security detailed in an agreed Trust Model;
- an assessment of C-ITS benefits across Europe, based on a hybrid communication approach;
- guiding principles for access to in-vehicle data. Further legal and technical analyses and the development of scenarios based on the cost benefit assessment of the different possible technical solutions is needed. The results of a dedicated Commission study will be available mid of 2017;
- a detailed analysis of privacy and data protection, which constitutes a sound basis for further work on the implementation of the new requirements stemming from the new General Data Protection Regulation.

The conclusion was that Day 1 C-ITS services – when deployed in an interoperable way across Europe – will produce a benefit cost ratio of up to 3 to 1 based on cumulative costs and benefits from 2018 to 2030. This means that every euro invested in Day 1 C-ITS services should generate up to three euro in benefits. Rapidly deploying as many services as possible will also mean they break even more quickly and will lead to higher overall benefits, mainly due to the network effect (which means that slow initial uptake rates would result in relatively long periods with few benefits).

Based on this work, the Commission considers that a list of technologically-mature and highly-beneficial C-ITS services should be deployed quickly so that end-users and society at large can benefit from them as soon as possible. This early deployment list is defined below as the *Day 1 C-ITS services list*.

In a second phase, the *Day 1.5 C-ITS services list* would be deployed. This is a list of services for which full specifications or standards might not be completely ready for large scale deployment from 2019, even though they are considered to be generally mature.

Respondents to the public consultation agreed all services (from both lists) should be included in early deployment.

Day 1 C-ITS services list
Hazardous location notifications:
• Slow or stationary vehicle(s) & traffic ahead warning;
• Road works warning;
• Weather conditions;
• Emergency brake light;
• Emergency vehicle approaching;
• Other hazards.
Signage applications:
• In-vehicle signage;
• In-vehicle speed limits;
• Signal violation / intersection safety;
• Traffic signal priority request by designated vehicles;
• Green light optimal speed advisory;
• Probe vehicle data;
• Shockwave damping (falls under European Telecommunication Standards Institute (ETSI) category 'local hazard warning').
Day 1.5 C-ITS services list
• Information on fuelling & charging stations for alternative fuel vehicles;
• Vulnerable road user protection;
• On street parking management & information;
• Off street parking information;
• Park & ride information;
• Connected & cooperative navigation into and out of the city (first and last mile, parking, route advice, coordinated traffic lights);
• Traffic information & smart routing.

Specific actions
• Member States and local authorities, vehicle manufacturers, road operators and the ITS industry should implement C-ITS and ensure that at least the list of Day 1 C-ITS

services is fully supported.
- The Commission will support Member States and industry in deploying Day 1 C-ITS services, notably through the Connecting Europe Facility, European Structural and Investment Funds and the European Fund for Strategic Investments.
- The Commission will provide funding for research and innovation through H2020, and possibly the European Structural & Investment Funds, for Day 1.5 C-ITS services and beyond, including higher levels of automation.
- The Commission will encourage the update of the Day 1.5 service list and future C-ITS service lists, through the continuation of the C-ITS Platform process.

3.2. Security of C-ITS communications

As the transport system becomes more and more digitised, it may also become more vulnerable to hacking and cyber-attacks. The cyber-security of C-ITS communications is therefore critical, and requires action at European level. Without clear rules, adopted at the Union level, C-ITS deployment in the EU will be delayed as investors are looking for a common approach for the internal market. Also, fragmented security solutions will put interoperability and the safety of end-users at risk.

The Commission therefore believes a common security and certificate policy[22] for C-ITS deployment in Europe needs to be developed. This view is supported by the recommendations of the C-ITS platform and the public consultation. Developing this policy depends on political support in Europe for a uniform and widely-accepted security solution for cooperative and connected vehicles, and related public infrastructure elements.

To develop and establish an EU-wide security framework, based on Public Key Infrastructure technology,[23] for vehicles and public infrastructure elements, including a compliance assessment process, all stakeholders need to be involved. A key challenge will therefore be to set up the necessary governance at EU, national and industry levels involving all main stakeholders, including public authorities (e.g. transport ministries and the responsible national security associations), road operators, vehicle manufacturers, C-ITS service suppliers and operators. Developing a common security solution for the deployment and operation of C-ITS in Europe will in turn lay the foundation for stronger security at higher levels of automation (including vehicle to vehicle and vehicle to infrastructure communication).

Specific actions
- The Commission will work together with all relevant stakeholders in the C-ITS domain to steer the development of a common security and certificate policy for deployment and operation of C-ITS in Europe. It will publish guidance regarding the European C-ITS security and certificate policy in 2017.
- All C-ITS deployment initiatives should participate in the development of this common security policy by committing from the beginning to implement future-proof C-ITS services in Europe.

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[22] The common security and certificate policy documents will for instance define the European C-ITS Trust model based on Public Key Infrastructure. They will, amongst others define legal, organisational and technical requirements for the management of public key certificates for C-ITS services based on the structures identified in (IETF) RFC 3647.
[23] In this context, public key infrastructure is the combination of software, asymmetric cryptographic technologies, processes, and services that enable an organization to secure C-ITS communications.

- The Commission will analyse the roles and responsibilities of the European C-ITS Trust Model, and whether some operational functions and governance roles should be taken over by the Commission (as, for instance, in the case of the Smart Tachograph[24]).

3.3. Privacy and data protection safeguards

The protection of personal data and privacy is a determining factor for the successful deployment of cooperative, connected and automated vehicles. Users must have the assurance that personal data are not a commodity, and know they can effectively control how and for what purposes their data are being used.

Data broadcast by C-ITS from vehicles will, in principle, qualify as personal data as it will relate to an identified or identifiable natural person. The implementation of C-ITS therefore requires compliance with the applicable data protection legal framework[25]. These rules lay down that processing of such data is only lawful if it is based on one of the grounds listed therein, such as the consent of users.

Data protection by design and by default principles and data protection impact assessments are of central importance in the basic C-ITS system layout and engineering, especially in the context of the applied communication security scheme. The responses to the public consultation indicate that when these conditions are met the willingness of end-users to give consent to broadcast data is not a barrier, in particular when the data is to be used to enhance road safety or improve traffic management.

Specific actions
- C-ITS service providers should offer transparent terms and conditions to end-users, using clear and plain language in an intelligible way and in easily accessible forms, enabling them to give their consent for the processing of their personal data.
- The Commission will publish first guidance regarding data protection by design and by default, specifically related to C-ITS, in 2018.
- The C-ITS deployment initiatives should:
  o work on information campaigns to create the necessary trust among end-users and achieve public acceptance;
  o demonstrate how using personal data can improve safety and efficiency of the transport system while ensuring compliance with data protection and privacy rules;
  o consult with EU Data Protection Authorities to develop a sector based data protection impact assessment template to be used when introducing new C-ITS services.

3.4. Communication technologies and frequencies

C-ITS messages will be transmitted for a wide range of services, in various transport situations and between different actors. Generally, drivers do not care what communication technology is used to transmit C-ITS messages, but will increasingly expect to receive all information on traffic and safety conditions seamlessly across Europe. This can only be

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[24] The Digital Tachograph records professional drivers' activities (rest and driving hours). It provides trustworthy information to EU enforcers checking compliance with the Social Regulation (EC) No 561/2006: https://dtc.jrc.ec.europa.eu/. A new version of the Digital Tachograph (Smart Tachograph) was defined in Regulation (EC) No 165/2014.

[25] Directive 95/46/EC applies until 24 May 2018. It has been repealed by Regulation (EU) 2016/679 - General Data Protection Regulation, applicable on 25 May 2018. Directive 2002/58/EC of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector is currently under a REFIT exercise by the Commission.

achieved through a hybrid communication approach, i.e. by combining complementary communication technologies.

To support all C-ITS services on the vehicle side, the full hybrid communication mix needs to be on-board.[26] On the infrastructure side the choice of communication technology will depend on the location, the type of service and cost efficiency. C-ITS messages should be unaware of, and thus flexible about the communication technology used, easing the inclusion of future technologies (e.g. 5G[27] and satellite communication[11]) into the hybrid communication mix.

Currently, the most promising hybrid communication mix is a combination of ETSI ITS-G5 and existing cellular networks. This ensures the best possible support for deployment of all Day 1 C-ITS services. It combines low latency of ETSI ITS-G5 for time-critical safety-related C-ITS messages with wide geographical coverage and access to large user groups of existing cellular networks.

In 2008, the Commission designated a specific frequency band for safety-related applications.[28] Initial deployment for short range vehicle-to-vehicle and vehicle-to-infrastructure communication will be based on technologies already available using this band and where appropriate will operate in seamless co-existence with 5G, under a complementarity principle. To safeguard existing and future safety-related applications from harmful interference, co-existence with applications using adjacent bands or the same spectrum needs to be ensured. Adequate mitigation techniques need to be defined and implemented (e.g. the co-existence with tolling) and spectrum allocation should be assessed carefully (e.g. the effect of the proposed Radio Local Area Network extension into this frequency band).

The respondents to the public consultation give widespread support for the hybrid communication approach. Less than 5% disagrees with initial deployment based on ETSI ITS-G5, and the vast majority sees 5G playing an important role in the long-term.

Specific actions
- Road authorities, service providers, vehicle and radio equipment manufacturers and other industrial players should adopt a strategy for hybrid communication in procurement and serial production in order to support the full Day 1 C-ITS services list.
- Telecom operators that support C-ITS services should appropriately manage network load for road safety related C-ITS services.
- The Commission will maintain the designation of spectrum used by ETSI ITS-G5 for safety-related ITS services and support measures to protect this frequency band from harmful interference, both at the European and international level (UN International Telecommunication Union and European Conference of Postal and Telecommunications Administrations).
- C-ITS deployment initiatives should implement the relevant mitigation techniques for co-existence according to ETSI standards and procedures.

3.5. Interoperability at all levels

An integrated transport system relies on the interoperability of its components. That means that systems need to be able to interact with each other, across borders and transport modes, at

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[26] Respecting the Radio Equipment Directive 2014/53/EU
[27] COM(2016)588: 5G for Europe: An Action Plan and accompanying Staff Working Document SWD(2016)306
[28] Decision 2008/671/EC

all levels: infrastructure, data, services, applications and networks. While standardisation activities are necessary, they alone are not sufficient to ensure interoperability. EU-wide deployment specifications therefore have to be defined and agreed upon. This includes ensuring that the applicable EU standards[29] are understood and consistently applied.

To this end, C-ITS deployment initiatives within the EU should define and publish the technical C-ITS communication profiles needed to ensure the interoperability of Day 1 C-ITS services. They should also develop test procedures to check the interoperability of these profiles. Granting mutual access to communication profiles will ensure that best practises and lessons learned from real life operation are shared. It should also lead to a gradual convergence of profiles, creating the conditions for EU-wide interoperability. The aim is to enable a single market for C-ITS services in Europe based on common communication profiles, which, however, leave space for future innovative services.

In 2016, Member States and the Commission launched the C-Roads Platform[30] to link C-ITS deployment activities, jointly develop and share technical specifications and to verify interoperability through cross-site testing. Initially created for C-ITS deployment initiatives co-funded by the EU, C-Roads is open to all deployment activities for interoperability testing.

Specific actions
- The Commission will make full use of the C-Roads platform as the coordination mechanism for C-ITS deployment at operational level.
- Member States should join the C-Roads platform for testing and validation, ensuring the interoperability of Day 1 C-ITS services across the EU.
- C-ITS deployment initiatives should complete their C-ITS communication profiles and publish them together with the testing and applicable validation standards.
- The C-Roads platform should start developing system tests based on the common communication profiles within one year of the start of the project, and give full access to these communication profiles to third parties and industry players, which should use these opportunities for validation.

3.6. Compliance assessment

The seamless deployment of Day 1 C-ITS services requires an effective compliance assessment framework that allows services to be checked against EU-wide system requirements. Especially for road-safety-related applications, there is a strong public interest in developing such a framework for key elements of the C-ITS network such as security, data protection or interoperability, to ensure that drivers receive consistent warnings in different traffic environments across the EU.

The first step for setting up such a framework will be to define common minimum requirements for the deployment of Day 1 C-ITS services, validated by all relevant stakeholders. This will provide the basis needed to jointly develop a fully-fledged compliance assessment process for Day 1 C-ITS services. This is also a prerequisite for either introducing new services (e.g. Day 2) or extending existing services into new areas of application (e.g. fully automated vehicles and their communications). An important guiding principle for all

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[29] M/453 (2009): Standardisation Mandate addressed to CEN, CENELEC and ETSI in the field of Information and Communication Technologies to support the Interoperability of Co-operative Systems for Intelligent Transport in the European Community;
M/284,329,358,363 under the RTTED (1999/5/EC), now consolidated under M/536 under the RED.
[30] The C-Roads Platform is co-funded under the Connecting Europe Facility (CEF)

future implementation activities is that they need to be compliant on both the infrastructure and vehicle side with the full Day 1 C-ITS service list.

> **Specific actions**
> - C-ITS deployment initiatives should help define a compliance assessment process for Day 1 C-ITS services and publish it to ensure third parties have full access.
> - The Commission will support the deployment initiatives in developing a fully-fledged common compliance assessment process for all key elements to ensure the continuity of C-ITS services and take into account potential service extensions.

3.7. Legal framework

If the EU wants to deploy the Day 1 C-ITS services in 2019, investments and regulatory frameworks need to converge across Europe. Rapid technological developments and the complexity of the issues at stake mean the right legal framework is needed. The Commission believes this framework needs to be developed through learning by experience, using feedback from and interaction between the C-ITS deployment initiatives and the C-ITS Platform.

As a result of this process, and in close cooperation with all stakeholders, the Commission will consider using the ITS Directive 2010/40/EU[31]. Other legal instruments might also be considered, e.g. for compliance assessment processes. The public consultation showed that 70% of respondents are in favour of Commission action to support both in-vehicle communication equipment and the deployment of selected C-ITS services.

> **Specific actions**
> The Commission will consider, where appropriate, making use of its mandate under the ITS Directive to adopt delegated act(s) by 2018 on:
> - ensuring continuity of C-ITS services
> - laying down rules to ensure security of C-ITS communications
> - ensuring the practical implementation of the General Data Protection Regulation in the area of C-ITS
> - ensuring a forward looking hybrid communication approach
> - laying down rules on interoperability
> - laying down rules on the compliance assessment processes

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[31] The ITS Directive 2010/40/EU may be used as the basis to adopt a coherent set of rules at EU level in order to create a single market for cooperative, connected and automated vehicles. The directive identifies in its Article 2 priority areas for the development and use of specifications and standards, among which the area of linking the vehicle with the transport infrastructure is included. The actions to be taken in this priority area are further detailed in Annex 1 to this Directive and comprise, among others, the definition of necessary measures to integrate different ITS applications on an open in-vehicle platform and to further progress the development and implementation of cooperative (vehicle-vehicle, vehicle-infrastructure, infrastructure-infrastructure) systems. Article 6 of the same Directive empowers the Commission to adopt specifications ensuring compatibility, interoperability and continuity for the deployment and operational use of ITS for other actions to be taken in the priority areas identified in Article 2. Those specifications should be adopted through a delegated act. In addition, the Commission could also use the empowerment bestowed upon it in priority area III which relates to ITS road safety and security applications and which are further detailed in point 4 of Annex I to the ITS Directive. The Commission is preparing the extension of the time frame of the mandate to adopt delegated acts under the ITS Directive 2010/40/EU.

3.8. International cooperation

International cooperation in the area of cooperative, connected and automated vehicles is fundamental as markets are developing globally. Public authorities have an interest in learning from each other and ensuring swift deployment of new technologies. Industry too has a strong interest in international cooperation, since it is looking for global markets when developing equipment, services and business models.

The EU has already benefitted from cooperation with Australia, Japan, Singapore and the US in areas such as research, security and harmonisation of standards. The EU should remain engaged with international partners to continue to benefit from their experiences, especially those gained from large scale deployment initiatives.

This includes promoting international standardisation (e.g. vehicle regulation and traffic rules in the United Nations Economic Commission for Europe), protecting the privacy of individuals and their personal data and cyber security, addressing legal aspects and enabling the coordination of research.

The G7 has also developed into an important arena for policy coordination and convergence at international level. Recently the G7 transport ministers agreed on two declarations to support the safe and effective early commercialisation of cooperative, connected and automated vehicle technologies.

> **Specific actions**
> The Commission will:
> - Continue promoting the convergence and coordination of C-ITS development and deployment activities in cooperation with international partners and initiatives.
> - Continue engaging in the twinning of Horizon 2020 research and innovation projects in the field of ITS with similar projects in third countries.

4. CONCLUSION

The coordinated and rapid deployment of cooperative, connected and automated vehicles in road transport urgently requires EU action. If successful, deploying these vehicles will make an important contribution to improving road safety, increasing the efficiency of road transport, and ensuring the competitiveness of EU industry.

With this Communication the Commission reaches an important milestone in creating a European strategy for the deployment of cooperative, connected and automated vehicles, as called for in the Declaration of Amsterdam. Together with other road initiatives which the Commission plans to adopt in 2017, this Communication should contribute to shaping the EU's road transport system of the future and to overcome the key challenges it faces today. The actions needed to achieve this goal and timeline have been identified and require a joint effort by all actors involved.

The Commission will seek to ensure synergies and coherence between ongoing and future initiatives and support the leading position of the Union in the field of cooperative, connected and automated vehicles. It calls upon all parties concerned, and in particular Member States and industry, to support the approach presented in this Communication, and collaborate at all levels and across sectors to start deploying cooperative intelligent transport systems successfully in 2019.