CONNECTED AND AUTOMATED DRIVING (development) IN EU

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Mobility in EU / Key facts and figures:

- **Total employment**
  - Sector mobility: 5%
  - The Mobility sector employs more than 11 million people, accounting for 5% of total employment.

- **Almost 50% of freight transport**
  - Road transport accounts for almost half of the total freight transport activity.

- **13% of household expenditure**
  - Transport accounts for 13% of the total household expenditure.

- **2010**
  - +42% →
  - +60% →

  From 2010 to 2050, it is estimated that passenger transport will grow by about 42 per cent. Freight transport is expected to grow by 60 per cent.
Mobility in EU / common vision:

- Energy Union: Clean Energy transition for all Europeans
- Juncker Plan for Investments: Reindustrialising Europe for Jobs and Growth, based on new business models and technologies
- Circular and Low Carbon Economy: Achieving a resource efficient, low-carbon economy
- Capital Markets Union: Triggering sustainable finance for the clean economy
- Fair Competitive and Sustainable Mobility
- Skills Agenda: Adapting the workforce
- Digital Single Market: Empowering citizens and consumers

Mobility in EU / How to reach common vision:

- Clean: Emissions standards and alternative power-trains boost the competitiveness of the automotive industry
- Fair & Competitive: Cooperative and connected driving cut fuel consumption and CO2 emissions
- Connected: Digital tachographs will help enforce social legislation in road transport
Benefits of automation, connectivity and smart mobility

Expected benefits of cooperative Intelligent Transport Systems by 2030

- **CO₂**
  - Reduce fuel consumption and CO₂ emissions by **1.2 per cent annually**

- **Clock**
  - **2.6 billion fewer hours** spent in traffic

- **Car**
  - Reduce the **human factor responsible for 90% of fatal crashes**

Reduce road congestions

- **1% of EU GDP**
  - **€110bn a year**

- **€220/year**

Source: Joint Research Centre report, “measuring road congestion”, 2012
Increase safety on the roads

Provide sustainable mobility

Transport in Europe is 94% dependent on oil, 84% of it is imported.

The EU crude oil import bill is estimated at around €187 billion a year.

Road transport alone is responsible for almost a fifth of EU emissions.
ITS development in EU:

- Directive 2010/40/EU on the framework for the deployment of ITS in the field of road transport and for interfaces with other modes of transport
- White paper: *Roadmap to a Single European Transport Area* (2011)

Legal basis for C-ITS:

**ITS Directive 2010/40/EU**

Priority area IV: Linking the vehicle with the transport infrastructure:

- exchange of data between vehicles, infrastructures and between vehicle and infrastructure,
- the availability of the data to be exchanged to the respective vehicle or road infrastructure parties,
- the use of a standardised message format for the exchange of data between the vehicle and the infrastructure,
- communication infrastructure for data exchange between vehicles and infrastructures,
- use of standardisation processes to adopt the respective architectures.
C-ITS key milestones:

- In 2014 European Commission established a C-ITS Deployment Platform
- In 2016 the EC launched GEAR 2030, a new High Level Group for the automotive industry
- 15th of February 2017 - first meeting of the High Level Structural Dialogue, Amsterdam → Declaration of Amsterdam
- 2017 March - “Letter of Intent on the testing and large scale demonstrations of Connected and Automated Driving” - the “Rome Process”
- 14th of September 2017, High Level Structural Dialogue in Frankfurt/M.
EU framework for C-ITS: C-ITS platform

Phase I
- Day-1 list of commonly agreed C-ITS services
- A common vision how to tackle cyber security
- A forward looking hybrid communication approach
  - kick start for road safety related services based on ETSI ITS-G5 communication
  - allowing integration of cellular where and when available and appropriate
- Guiding principles for access to in-vehicle data
- Analysis on privacy and data protection
- Principles of compliance assessment

Phase II
- Continue supporting C-ITS deployment – implement recommendations of first phase
- Analyse how cooperation, connectivity and automation converge
- C-ITS Platform Report Phase II ➔ expected September 2017

EU framework for C-ITS deployment: C-ITS Strategy

Strategy on Cooperative Intelligent Transport Systems, a milestone towards cooperative, connected and automated mobility.
- adopted 30 Nov 2016
- First EC Deliverable following the Declaration of Amsterdam of EU Transport
- “Making C-ITS a reality from 2019 onwards”
The cooperative element – enabled by digital connectivity – is expected to significantly improve road safety, traffic efficiency and comfort of driving.

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, they reinforce each other and will over time merge completely.

Priorities for deployment of C-ITS Services
- At least fully support the list of Day 1 C-ITS
- EC will continue to support and co-funded activities
- Update of the Day 1.5 service list and future C-ITS service lists, through the continuation of the C-ITS Platform process

Security of C-ITS communications
- EC will steer the development of a common security and certificate policy for deployment and operation of C-ITS
- EC will publish guidance regarding the European C-ITS security and certificate policy in 2017
- EC will analyse whether some operational functions and governance roles should be taken over by the Commission
EU framework for C-ITS deployment: C-ITS Strategy

Privacy and data protection safeguards

- C-ITS service providers should offer transparent terms and conditions to end-users enabling them to give their consent for the processing of their personal data
- EC will publish first guidance regarding data protection by design and by default in 2018
- EC calls to work on information campaigns, demonstration of how using personal data can improve safety and efficiency, consultation of EU Data Protection Authorities to develop a sector based data protection impact assessment template

Communication technologies and frequencies

- Hybrid communication approach
  - combining complementary communication technologies
  - Initial deployment for short range vehicle-to-vehicle and vehicle-to-infrastructure communication will be based on technologies already available: therefore combination of ETSI ITS-G5 (5,9 GHz Band) and existing cellular networks
  - where appropriate will operate in seamless co-existence with 5G, under a complementarity principle.
- EC 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.
- C-ITS deployment initiatives should implement the relevant mitigation techniques for co-existence according to ETSI standards and procedures.
Compliance Assessment
- 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.

Legal framework
- The Commission will consider, where appropriate, making use of its mandate under the ITS Directive to adopt delegated act(s) by 2018
- Other legal instruments might also be considered, e.g. for compliance assessment processes

C-ITS Platforms:
- Amsterdam Group
- C-Roads Platform
- CODECS
- European Framework for C-ITS Deployment
C-ITS platforms: Amsterdam Group

Strategic alliance of committed key stakeholders (umbrella organisations) with the objective to facilitate joint deployment of cooperative ITS in Europe:

- Car 2 Car
- Polis
- ASECAP
- CEDR

The role of the Amsterdam Group:

- Facilitate dialogue between actors, e.g. on corridors results and needs
- Integrated communication interface towards the individual members of the Amsterdam group
- Exchange of experience between corridors, front runners, etcetera.
- Communicates with EC and other bodies (e.g. ETSI/CEN)
- Functional specifications for C-ITS services as input for standardization
- Taking away barriers for deployment
**C-ITS platforms:**

**Amsterdam Group**

Example: Safety related message sets

<table>
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<tr>
<th>DATEX II (CEN/TS 16157)</th>
<th>TMC Events (EN ISO 14819-3)</th>
<th>TPEG-TEC (ISO/ITS 21219-15)</th>
<th>DENM (ETSI EN 302 637-3)</th>
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<td>SurfaceWater</td>
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</tbody>
</table>

**C-ITS platforms:**

**C-ROADS**

The aim of the C-Roads Platform

- linking all C-ITS deployments
- development of commonly agreed specifications taking the EU-C-ITS Platform recommendations into account
- planning intensive cross-testing to verify interoperability

C-Roads Platform partner will deploy common communication profiles by focusing on a hybrid communication mix, which is a combination of ETSI ITS-G5 and operational cellular networks.
C-ITS platforms: C-ROADS

The C-Roads Platform
- Harmonised deployment of C-ITS in Europe
- Definition of specifications (security, communication, etc.)
- Cross-border pilots & testing in Member States, open to all
- Close cooperation with EC and C-ITS platform, Coordination mechanism of ALL European C-ITS implementation initiatives
- Already over €150 M in deployment investment, expected to be doubled with next CEF Call
C-ITS platforms: C-ROADS

The role of the CODECS:

- Coordinating initial deployment activities
- Aligning deployment road maps
- Giving strategy coordination support
- Raising awareness for the idea of cooperative road traffic
C-ITS platforms: CODECS

Through interactive discussion CODECS develops:

- V2I/I2V standards profile
- White papers closing gaps in standardisation,
- Blueprint for deployment

Status:

- Deployment corridors/pilots in >10 Member States
- Initiatives growing together across TEN-T network
- Actors aim for interoperable solutions
- Number of deployed services grows

Outlook:

- Guiding strategy „C-ITS Master Plan“
- Delegated act will provide framework
- C-Roads project family: Deploy broader service portfolio
- Link to C-Roads Platform: Ensure harmonised deployment
C-ITS Pilots & Deployment initiatives

- Cooperative ITS Corridor
- SCOOP@F
- NordicWay
- C-ITS Pilots (Austria, Slovenia, Hungary, Czech Republic)
- SISCOGA and related initiatives in Spain
- A2/M2 Connected Vehicle Corridor
- Emerging initiatives – C-Roads / INTERCOR
- C-ITS Corridor Rotterdam – Frankfurt/M. – Vienna
- C – the Difference
- C-ITS Deployment Initiatives from an urban and hub perspective (COMPASS4D, CO-GISTICS, TM 2.0, C-MOBILE)
Conclusion: 5G Action Plan

Conclusions: EU vs USA

Europeans take the tram or subway 4 times more than Americans do. They also choose the train 10 times more often than Americans.

I RAIL
Thank you for attention!

Questions?

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