The deployment of automated mobility services

SYMPOSIUM OF THE FUTURE NETWORKED CAR

ITU/UNECE

GENEVA, 7 MARCH 2019
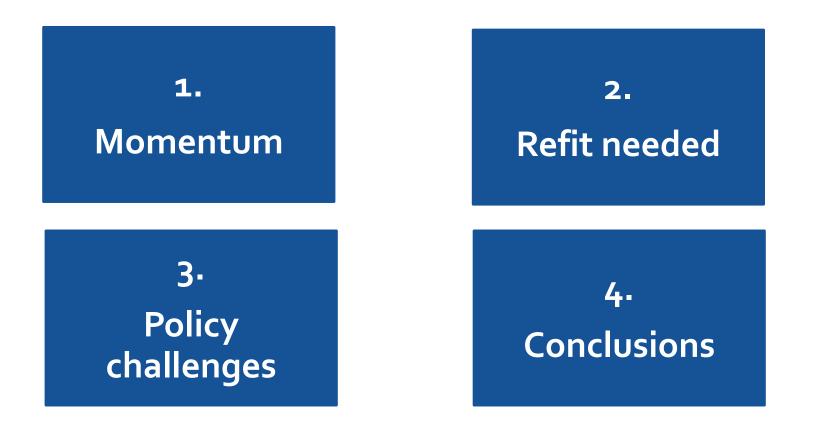
Joost Vantomme

Smart Mobility Director

AGENDA

1.

Momentum

2.

Refit needed

3.

Policy challenges

4.

Conclusions

1. Momentum

AUTOMATED DRIVING : OPPORTUNITIES

ACEA

Safety
- Improve support of driver
- Reduce accidents caused by human errors

PRIORITY

Traffic efficiency
- Reduced number of crashes
- Better vehicle throughput
- Road capacity learning systems

New mobility
- Shared/on demand mobility
- Access for aging people
- Increasing urban customers
- Multi-modal

Resources
- Sustainability: climate and environmental gains
- Productivity: value of time
- Differentiated use of land/urban/suburban
- Upgraded city planning

DIFFERENT ENVIRONMENTS, DIFFERENT CHALLENGES

TRUST: WE HAVE NO RIGHT TO FAIL

Safety is the <u>highest priority</u> for vehicle manufacturers

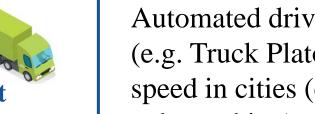The industry invests a large part of its €54 billion R&D Budget making vehicles safer

SAFE **DRIVERS**   SAFE **VEHICLES**   SAFE **ROADS**

+ Security and cyber resilience

EUROPEAN UNION TIMELINE

Trucks and Cars

Public Transport

2020
Automated driving on Motorways (e.g. Truck Platooning) and at low speed in cities (e.g. Garbage trucks or valet parking)

2030
Towards Fully Automated Mobility

All new Vehicles

By 2022
- Connected to the Internet
- Many of them able communicate directly with each other and with their environment (from 2019)
- Supported by free services, high precision digital mapping thanks to satellite date from Galileo services (from 2019)

Source: EC Communication "On the road to Automated Mobility: An Eu strategy for the mobility of the future", May 2018

ARE WE THERE YET ?

- ✓ Further research and develop automated driving technology and relevant standards

- ✓ Upgrade and adapt physical and digital road infrastructure for automated driving

- ✓ Review/refit, adapt and harmonise all relevant regulation to create the right regulatory framework for the deployment of automated driving

- ✓ Continue performing large-scale and cross border tests of automated systems on open roads

- ✓ Strengthen cooperation between all stakeholders and get political support for promoting wide-scale introduction of automated driving

- ✓ Inform and educate the public and future drivers and passengers of autonomous vehicles

2. Refit of the framework

AUTOMATED DRIVING : TO DO LIST

-Type approval & certification
- Active and passive safety
- Testing on open roads
- Cyber security
- AI/self-learning systems

-Vienna and Geneva conventions (traffic rules)
-Liability rules & insurance
-Data protection
-Machine generated flows

-Social acceptance
-Driver education
-Co-existence non-automated and automated
-Ethical questions

-Traffic management
-Updated physical infrastructure
-Updated digital infrastructure
-ODD

WHO TO LEGISLATE WHAT ?

AUTOMATICALLY COMMANDED STEERING FUNCTION (ACSF), BRAKING FUNCTIONS AND AEBS

- **Framework Regulation on Automated/Autonomous Vehicles** – New Regulation
- **ACSF** – R79 or New Regulation
- **AEBS** – New Regulation (2020)
- **Braking** – R13, R13H

ROAD WORTHINESS

- **Periodic Technical Inspection** – 97 Agreement?

TRAFFIC RULES

- **Revision of the Geneva and Vienna Conventions**
- **Revision of all national road traffic regulations**

DRIVER MONITORING

- **HMI** – To include Drowsiness / Driver Sentinel – New Regulation

MUTUAL RECOGNITION

- **Art. 20 Exemption Procedure Guidelines** (2019)

CYBERSECURITY

- **CSMS** – New Regulation (2019)
- **Cybersecurity for CAD** – New DR

SOFTWARE UPDATE

- **Software OTA Update** – New Regulation (2019)

LIABILITY

- **DSSAD** – New Regulation (WPA 29 Informal Group)
- **Accident Data Recorder** – New DR (based on US FMVSS as quasi-international standard) (2022)
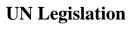
SIGNALLING AND ROAD MARKINGS

- **Road Signs** – Regulation (EC) 1071/2009
- **Law Enforcement Recognition** – New Regulation
- **Road Signs** – National Laws on Road signing to be updated

DRIVER TRAINING

- **Driving licences** – Directive 2006/126 EC

UN Legislation

EU Legislation

National Legislation

ACEA ROADMAP & TOOLBOX

ACEA works on a Roadmap for the Deployment of Higher Levels of Automated Driving

Contains for each SAE level of automation:

- ✓ Timing for AD systems
- ✓ Technical requirements
- ✓ Safety and security requirements
- ✓ Regulatory requirements & policy fora
- ✓ Infrastructure requirements

3. New policy challenges

NEW POLICY CHALLENGES

- **Connectivity for automation**
  - C-ITS
  - M2M and telecoms legislation
  - Satellite (very precise geo positioning)
- **Data economy**
  - V2V, V2I, V2X data sharing
  - No need for *ex-ante* regulatory intervention -> new markets, innovation
- **Data protection & privacy**
- **Liability rules**
- **Artificial intelligence**
- **Spectrum**
- **Refit public transport legislation for shared autonomous driving ?**
- **MaaS: data sharing, public/private**

SPECTRUM

o **WRC 2019**

- ▪ Key forum
- ▪ Need for globally harmonised frequency allocation

o **Frequency allocation**

- ▪ Scare resource
- ▪ Ensure efficient use of spectrum
- ▪ Safeguard 5,9 GHz for road ITS safety

o **V2V : interoperability and backwards compatibility in European C-ITS approach**

SPECTRUM

o **Avoid harmful interference/co-existence of technologies**

- Short range ITS G5 – LTE-V2X + long range cellular
- Draft CEPT Report 71

o **Need for additional spectrum**

- Connectivity as complement to automation
- Safety critical use case require low latency and unhindered bandwidth
- New applications related to Warnings, Awareness, Vulnerable Road Users, Truck Platooning, Vehicle Automation (e.g. Collective Perception (CPM) and Maneuver Coordination (MCM)) and infrastructure messages, new C-ITS use cases
- Broaden the current 30 MHz in 5,9 GHz band
- 5G approach

4. Conclusions

GLOBAL POLICY FRAMEWORK

- **Global harmonisation is crucial for the timely and cost efficient deployment of connected and automated driving**

- **Need to adjust vehicle regulations for automated driving**
  - UN Regulations
    - **Changes to Vienna Convention**
    - **Automatic steering: update of UNECE R79**
  - National laws
    - **Update national road traffic codes**

GLOBAL POLICY FRAMEWORK

- **Now: Working Party on Automated/Autonomous and Connected Vehicles (GRVA) created in June 2018**
  - Part of the World Forum for Harmonization of Vehicle Regulations (UNECE)

- **GRVA work plan for near future**
  - Define global road map
  - Define the right policy level (global or regional) to implement the road map
  - Coordinate other working parties on amendments related to automated driving

- **Necessary to change the type approval process, global approach**
  - Pillar 1: Road test
  - Pillar 2: Track test
  - Pillar 3: Audit / assessment

World Forum for Harmonization of Vehicle Regulations (WP.29)
Working Party on Automated/Autonomous and Connected Vehicles (GRVA)

THANK YOU FOR YOUR ATTENTION

@ACEA_eu
www.ACEA.be

Joost Vantomme,
Smart Mobility Director,
jv@acea.be

BACK UP

ACEA MEMBERS

KEY FIGURES ABOUT THE INDUSTRY

13.3 million Europeans work in the automotive sector

3.4 million jobs in automotive manufacturing

€413 billion in tax revenues (EU15)

€53.8 billion in R&D spending, largest private investor

€90.3 billion positive net trade contribution

R&D PROJECT: L3PILOT
Piloting Automated Driving on European Roads

ENSEMBLE

R&D PROJECT: ENSEMBLE
Enabling Safe Multi-brand Platooning for Europe

Project details in the back-up slides

R&D PROJECT: L3PILOT
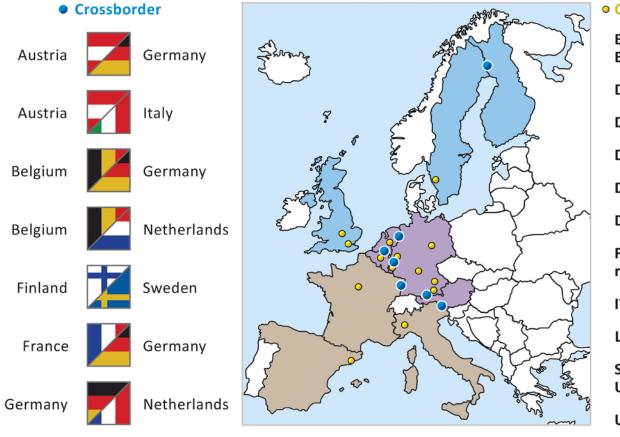## Piloting Automated Driving on European Roads

Objective	Demonstrate automated driving in complex traffic environments.
Expected Achievements	Optimal design and handling of Automated Driving functions and knowledge about the most effective way of their implementation. Valid data on impact of Automated Driving on safety &traffic efficiency. Code of Practice for Automated Driving with guidelines for systematic development of Automated Driving functions.
Benefits for society	Accelerating the implementation of level 3 automated driving by addressing technical and legal constrains.

1000 drivers
100 cars
10 countries
34 partners

Piloting Automated Driving on European Roads

European Commission | Co-funded by the Horizon 2020 Programme for Research & Innovation

Partners: 34
(VW, BMW, Ford, Honda, Opel, TME, Daimler, PSA, Renault, FCA, Volvo Cars, Volvo Group)

Budget: 68 M€

Funding: 36 M€

Pilot Centers for a Pan-European Pilot

Crossborder

Country		Country
Austria		Germany
Austria		Italy
Belgium		Germany
Belgium		Netherlands
Finland		Sweden
France		Germany
Germany		Netherlands

Country, region - OEM

BE, Brussels; NL; ES, Barcelona - Toyota

DE, Aachen - Ford

DE, Ingolstadt - Audi

DE, Munich - BMW

DE, Offenbach - Honda

DE, Wolfsburg - VW

FR, Paris and other regions - REN, PSA

IT, Turin - CRF

LU; NL - Delphi

SE, Gothenburg; UK, London - Volvo

UK, Coventry - JLR

NORTH   CENTRAL   SOUTH-WEST

Traffic Jam   Motorway   Parking   Urban

R&D PROJECT: ENSEMBLE
Enabling Safe Multi-brand Platooning for Europe

ENSEMBLE

Objective	Pave the way for the adoption of multi-brand truck platooning in Europe to improve traffic safety, throughput and fuel economy.
Expected Achievements	Develop solutions to ensure robustness, reliability and interoperability of the platoon operation in real road conditions. Promote multi-brand platooning by demonstrating in real traffic conditions across national borders.
Benefits for society	Making road transport more efficient and safer.

Partners: 20
(all truck OEMs)

Budget: 26 M€

Funding: 19 M€

European Commission | Co-funded by the Horizon 2020 Programme for Research & Innovation

ACEA ROADMAP FOR TRUCK PLATOONING

Step 1
Mono-brand platooning: trucks from the same brand form a platoon

Step 2
Multi-brand platooning (up to SAE level 2) with the driver still ready to intervene

Step 3
Driver of a trailing truck can rest

Step 4
Full autonomous trucks (starting with driver in the lead truck)

TECHNOLOGY

Enabling technology

Mono-brand platooning

- Multi-brand platooning
- Communication with infrastructure and other road users

Truck manufacturers develop and introduce

European Truck Platooning Challenge demonstrated the technological feasibility of (mono-brand) platooning and provided assessment of remaining barriers

Further development of platooning technology, testing and verification projects by truck manufacturers

Manufacturers take part in various test cases involving logistics operators to examine platoons in real-life conditions and develop the business case for truck platooning

Development of multi-brand platooning technology (H2020 research project funded by the EU), as well as standardisation of communication protocols

2016	2017	2018	2019	2020	2021	2022	2023

POLICY

Regulatory changes and enabling policy measures required for platooning

Regulatory kick-off: Declaration of Amsterdam

National authorities and the EU support and facilitate cross-border testing across Europe

Review, adaptation and development of the required regulatory framework, as well as harmonising it, at various levels:
- UNECE
- EU framework
- National traffic laws

Development of market incentives, such as toll and tax reductions, CO_2 bonuses or flexibility in driving time, to stimulate the uptake of truck platooning

Market introduction of this technology will require permission to drive platoons on motorways across the EU, without needing any specific exemptions

ACCESS TO VEHICLE GENERATED DATA

- Priority is to safeguard vehicle integrity: 1) safety 2) security 3) liability
- Giving third-party services direct access would facilitate hacker attacks (more entry points) and pose safety risks (eg driver distraction)
- Off-board access is the safest and most secure way to share vehicle data
- ACEA's position: Extended Vehicle

Relevant vehicle data are communicated by the manufacturer to an off-board facility

Service providers can then access vehicle data through off-board means, rather than having direct access to the vehicle in an uncontrolled way

The off-board facility acts as a gatekeeper, minimising safety, security and liability risks

ACEA POSITION PAPERS
On Smart Mobility and Cybersecurity

Principles of Automotive Cybersecurity

https://goo.gl/L7SdRX

Access to Vehicle Data for Third-party Services

https://goo.gl/Lf8vAB

Principles of Data Protection in relation to CAD

https://goo.gl/37iCHV

www.acea.be/industry-topics/tag/category/connected-and-automated-driving