AGENDA

1.

Evolving ecosystem

2.

Momentum in Europe

3.

Policy challenges

4.

Conclusions

ACEA MEMBERS

KEY FIGURES ABOUT THE INDUSTRY

13.3 million Europeans work in the automotive sector

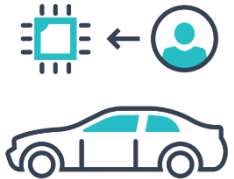**3.4 million** jobs in automotive manufacturing

€413 billion in tax revenues (EU15)

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

€90.3 billion positive net trade contribution

1. Evolving ecosystem

DIGITALISATION ► SMART MOBILITY

1. **Connected and automated vehicles**

2. **New mobility solutions**

3. **Connected transport systems**

4. **Integrating transport modes**

NEW MOBILITY SOLUTIONS

- **Innovative concepts**
  - New models of ownership
    - Various car-sharing schemes: eg Car2Go/DriveNow
  - On-demand mobility solutions
    - Ride sharing: eg BlaBlaCar and Uber
  - Urban logistics concepts

- **Auto manufacturers are evolving**
  - From being 'just' producers of motor vehicles to networked mobility service providers

CONNECTED TRANSPORT SYSTEMS

- **Cooperative Intelligent Transport Systems (C-ITS)**
  - Networking of intelligent vehicles
    - Vehicles with each other (V2V) – eg emergency braking
    - Vehicles with infrastructure (V2I) – eg speed advice
  - Interoperability is key, no mandate on technology
 - Testing with pilot projects underway in various member states

- **Benefits**
  - Optimise traffic flows
  - Manage parking space
  - Improve safety
  - Reduce emissions

INTEGRATING TRANSPORT MODES

- **C-ITS enables tailor-made, intermodal solutions**

- **Future mobility**
  - Each transport mode will be complementary, and connected, to the others
  - Co-modality: people switch between modes depending on their needs
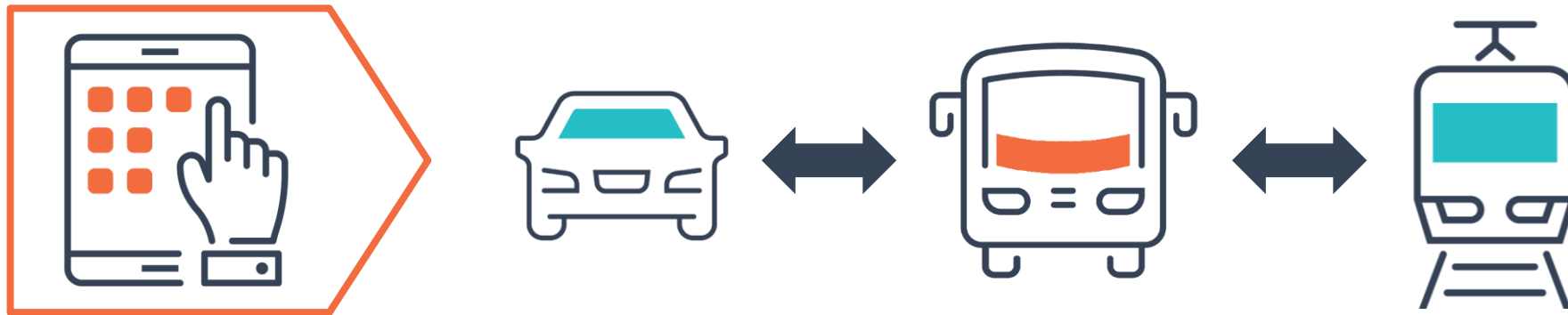
- **Privately-owned cars remain main providers of individual mobility**
  - Because of their flexibility, especially for those living outside urban areas

DIFFERENT ENVIRONMENTS, -> DIFFERENT CHALLENGES

AUTOMATED DRIVING : OPPORTUNITIES

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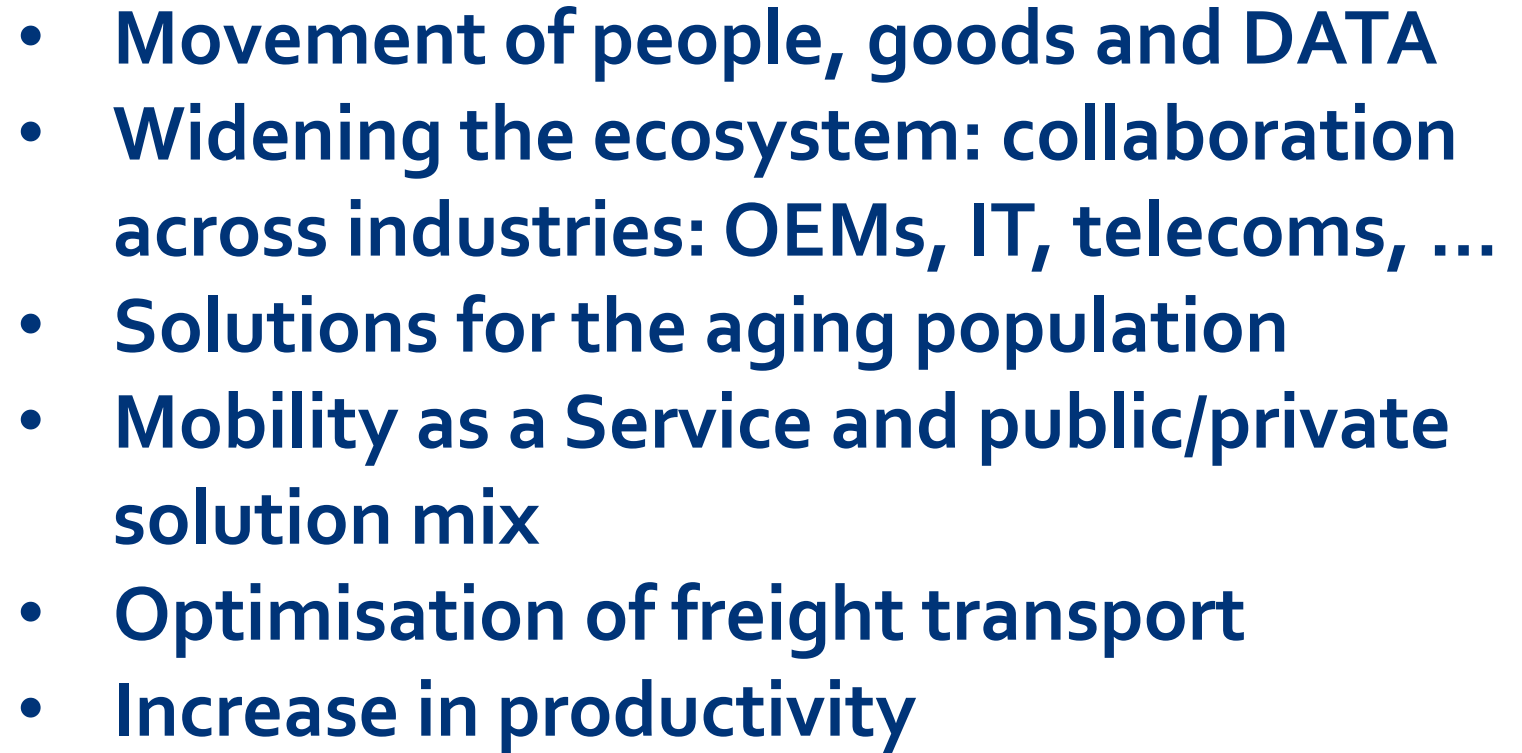
PRIORITY

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
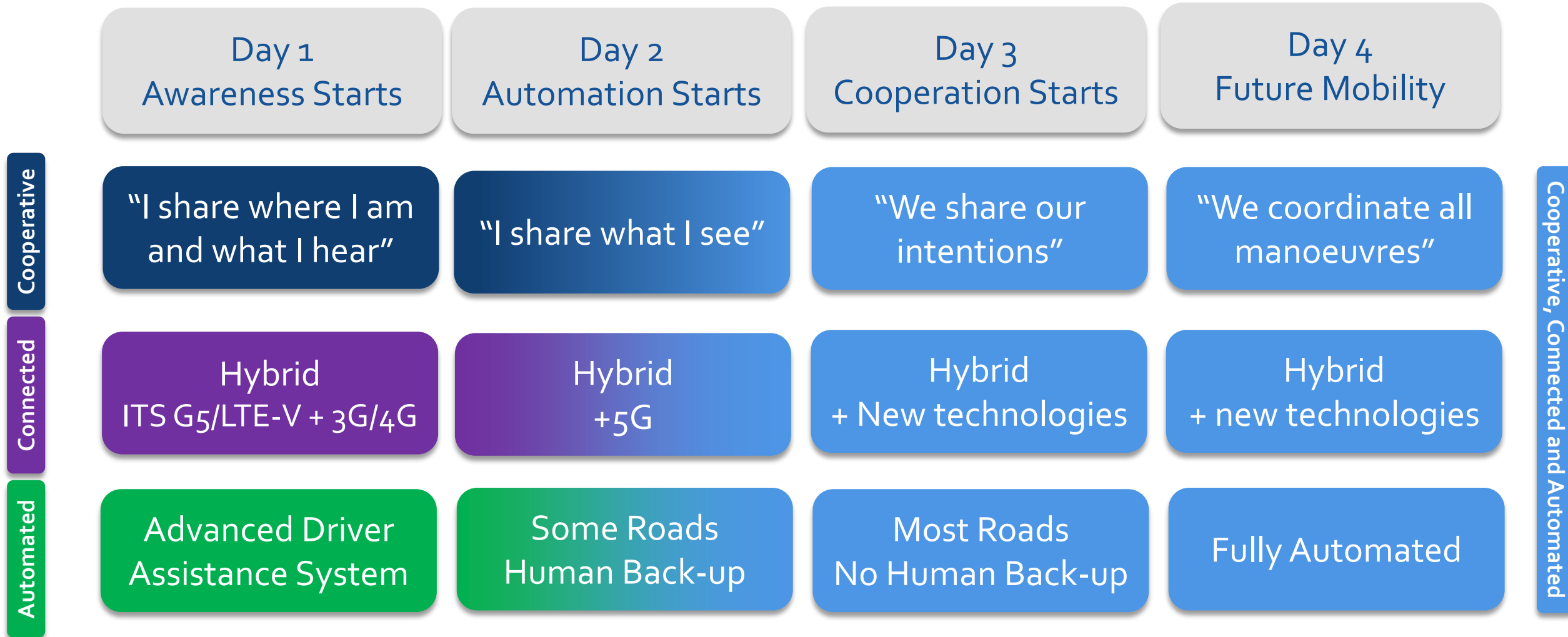- ✓ Multi-modal

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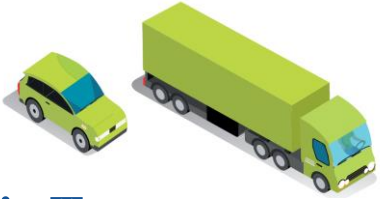- ✓ Upgraded city planning

ICV OPPORTUNITIES IN EUROPE

- **Movement of people, goods and DATA**
- **Widening the ecosystem: collaboration across industries: OEMs, IT, telecoms, …**
- **Solutions for the aging population**
- **Mobility as a Service and public/private solution mix**
- **Optimisation of freight transport**
- **Increase in productivity**

2. Momentum in Europe

STEP BY STEP APPROACH

Day 1 Awareness Starts	Day 2 Automation Starts	Day 3 Cooperation Starts	Day 4 Future Mobility
"I share where I am and what I hear"	"I share what I see"	"We share our intentions"	"We coordinate all manoeuvres"
Hybrid ITS G5/LTE-V + 3G/4G	Hybrid +5G	Hybrid + New technologies	Hybrid + new technologies
Advanced Driver Assistance System	Some Roads Human Back-up	Most Roads No Human Back-up	Fully Automated

Cooperative

Connected

Automated

Cooperative, Connected and Automated

Source: European Commission

EUROPEAN UNION TIMELINE
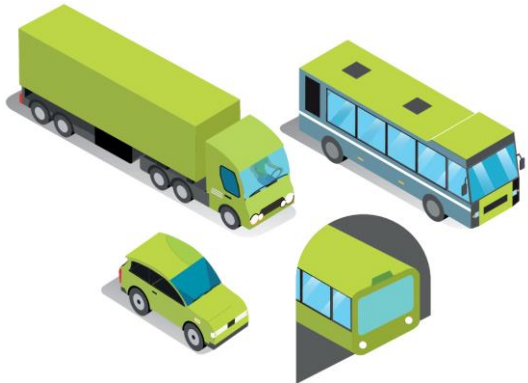
Trucks and Cars

Public Transport

2020
Automated driving on Motorways (e.g. Truck Platooning) and at low speed in cities (e.g. garbage trucks or valet parking)
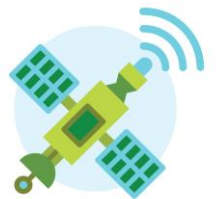
2030
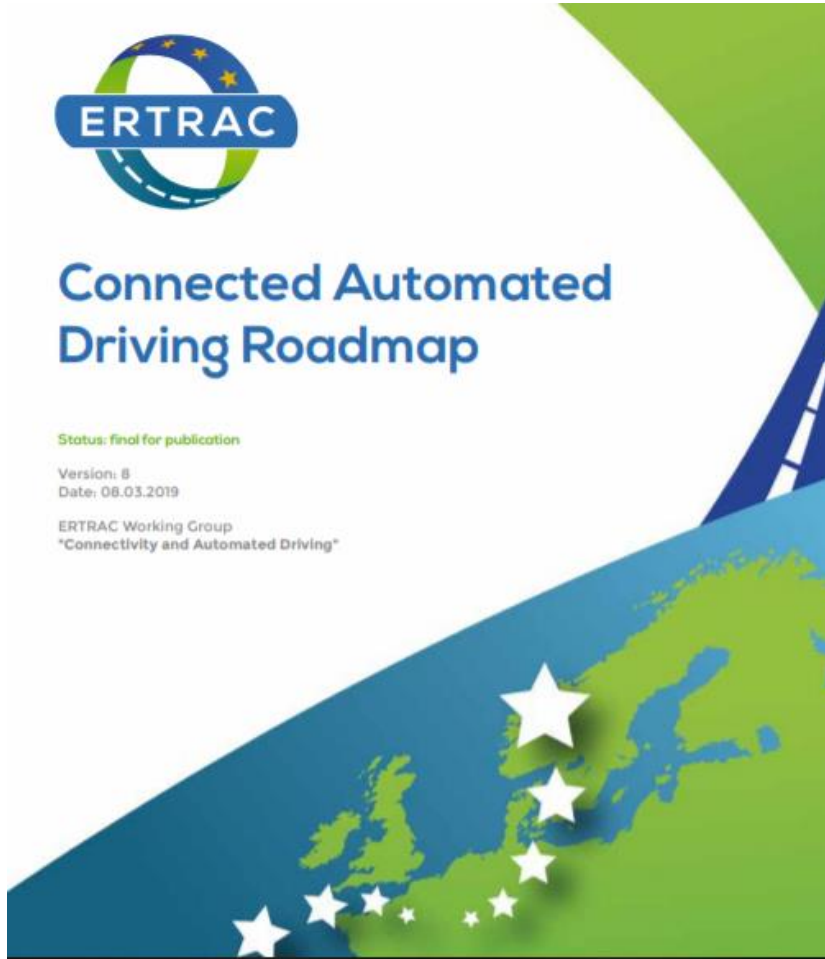**Towards Fully Automated Mobility**

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

ROADMAPS

Connected Automated Driving Roadmap

Status: final for publication

Version: 8
Date: 08.03.2019

ERTRAC Working Group
"Connectivity and Automated Driving"

ERTRAC :
- <u>E</u>uropean <u>R</u>oad <u>T</u>ransport <u>R</u>esearch <u>A</u>dvisory <u>C</u>ouncil
- European Technology Platform for Road Transport

Roadmap contains:
- Common definitions on ICV
- Development paths
- National and EU initiatives
- Key challenges and objectives

https://www.ertrac.org/uploads/documentsearch/id57/ERTRAC-CAD-Roadmap-2019.pdf

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

R&D FUNDING -> PILOTS -> DEPLOYMENT

ACEA

3 ICT 5G cross-border corridor pilots

5GCroCo   5G CARMEN   5G-MOBIX

- Launched in November 2018, 36 months duration

- Cover 1,000+km highways crossing 8 borders

- Main Corridors: Bologna-Innsbruck-Munich, Metz-Merzig, Porto-Vigo, Evora-Merida

- Pilots of 5G-enabled CAM applications based on multi-vendor , multi-operators

  domains and open service platform.

- Target Use cases: HD platooning, collaborative manoeuvers, HD maps distribution,

  Remote driving, see through, infotainment.

Sept 2016: 5G Action plan
https://ec.europa.eu/digital-single-market/en/news/communication-5g-europe-action-plan-and-accompanying-staff-working-document

HORIZON 2020

STRIA roadmap

CEF programme

L3Pilot Driving Automation

Cooperative ITS Corridor
Joint deployment

C-ROADS

EUROPEAN TRUCK PLATOONING

Projet SCOOP
véhicules et routes connectés
connected vehicles and roads

Nordic WAY

CONCORDA
Co-financed by the European Union
Connecting Europe Facility

And many more projects...
Info: https://ec.europa.eu/digital-single-market/en/connected-and-automated-mobility-europe

2 EXAMPLES

R&D PROJECT: L3 PILOT

Piloting Automated Driving on European Roads

https://l3pilot.eu

ENSEMBLE

R&D PROJECT: ENSEMBLE

Enabling Safe Multi-brand Platooning for Europe

https://platooningensemble.eu/

INTEGRATED VALUE CHAIN APPROACH

New Single Platform for open road testing and pre-deployment of cooperative, connected, automated and autonomous mobility

https://ec.europa.eu/transport/modes/road/news/2019-02-26-call-applications-single-platform_en

COOPERATION ACROSS SECTORS

Name	Link		Focus
ERTICO	www.ertico.com		ITS funded projects, public/private
EATA	www.eata.be		Auto/telco/IT sectors European focus Policy & outreach
5GAA	www.5GAA.org		Worldwide focus Technology focus: CV2X/5G for ICV Projects/roll-out
ERTRAC: European Road Transport Research Advisory Council	www.ertrac.org		Transport Research & Innovation Roadmaps on ICV Broad coalition

INTERCONNECTED ECOSYSTEM

Name	Link		Focus
ETPC	www.eutruckplatooning.com		Truck Platooning Policy focus
MaaS Alliance	https://maas-alliance.eu/		Mobility As a Service Promote Maas Public/private

3. Policy challenges

POLICY MAKING AT VARIOUS LEVELS

UN Legislation   EU Legislation   National Legislation

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

- **Framework Reg. on AV** – New Regulation
- **ACSF** – R79 or New Regulation
- **AEBS** – New Regulation
- **Braking** – R13, R13H
- **Driver Monitoring** – New Regulation
- **Minimum risk Manoeuvre** – New Regulation

CYBERSECURITY

- **CSMS** – New Regulation
- **Cybersecurity for CAD** – New delegated regulation

SOFTWARE UPDATE

- **Software OTA Update** – New Regulation

LIABILITY AND ACCIDENT RECOGNITION

- **DSSAD** – New Regulation (WPA 29 Informal group)
- **EDR** – New delegated regulation

MUTUAL RECOGNITION

- **Art. 20** Exemption Procedure guidelines

DRIVER

- **HMI** – To include Drowsiness/Driver Sentinel – New Reg
- **Driving Licences** – Directive 2006/126/EC
- **HMI Guidelines** – New guidelines

TRAFFIC RULES

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

ROAD INFRASTRUCTURE

- **Road Infrastructure Safety Management (RISM)** Revision
- **Road Signs** – Regulation (EC) 1071/2009
- **Law Enforcement recognition –** New regulation
- **Road Signs** – National Laws on road signing to be updated

ROAD WORTHINESS

- **Periodical Technical Inspection – 97 Agreement**

SOCIETAL LEGISLATION

- **Driving time -** Regulation (EC) No 561/2006
- **Tachograph** - Regulation (EU) N° 165/2014

CYBERSECURITY

- **Requires global approach**
  - o Opportunity comes with risks
  - o One of these is the threat of a direct cyberattack
    on vehicles or a whole vehicle fleet

- **ACEA's 6 key cybersecurity principles**

  Protection of connected and automated vehicles against cyber threats
  1. Cultivating a cybersecurity culture
  2. Adopting a cybersecurity life cycle for vehicle development
  3. Assessing security functions through testing phases: self-auditing & testing
  4. Managing a security update policy
  5. Providing incident response and recovery
  6. Improving information sharing amongst industry actors

- **Full document :** https://www.acea.be/publications/article/acea-principles-of-automobile-cybersecurity

ACCESS TO VEHICLE GENERATED DATA

o **Priority is to safeguard vehicle integrity: 1) safety 2) security 3) liability**

o **Giving third-party services <u>direct access</u> would facilitate hacker attacks (more entry points) and pose safety risks (eg driver distraction)**

o **<u>Off-board</u> access is the safest and most secure way to share vehicle data**

o **ACEA's position: Extended Vehicle : http://cardatafacts.eu**

Safe ✓ Privacy ✓
Secure ✓ ... ✓
ACCESS

Safe ✗ Privacy ✗
Secure ✗ ... ✗
STOP

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
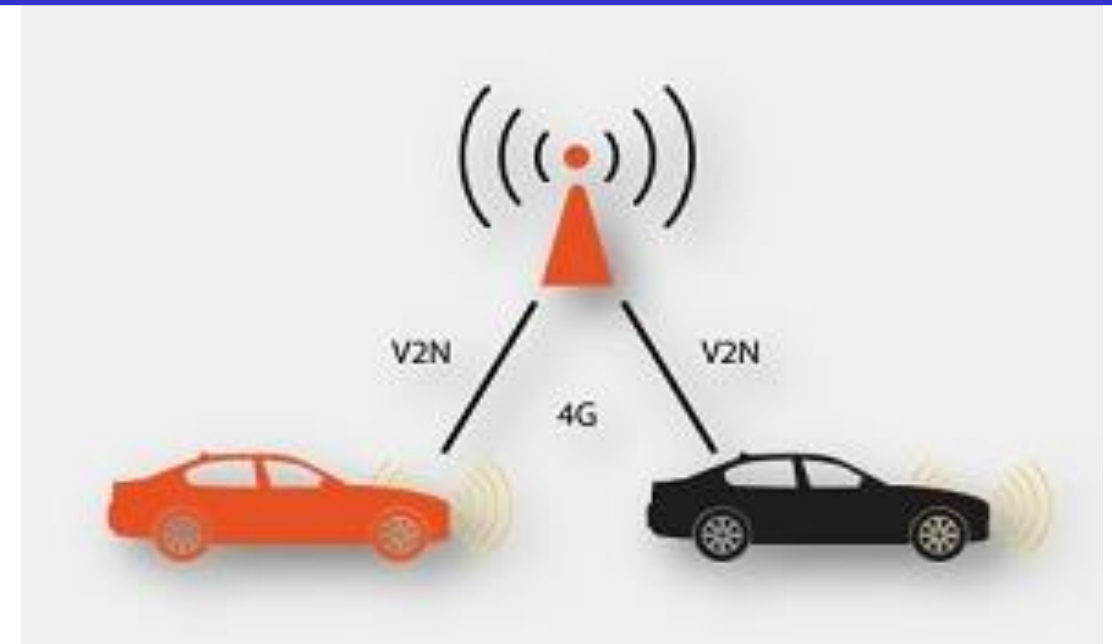
COMMUNICATION TECHNOLOGIES

Short range: direct communication device to device

- ITS G5 : uses WIFI as connectivity layer
- LTE-V (CV2X): uses a cellular network as connectivity layer (but is not a mobile communication like 4G)
- 5,9 GHz band

Long range: base stations, network management, operator in between

- 3G/4G
- 5G

HIGHER LEVELS OF AUTOMATION

- 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
- Update physical infrastructure
- Update digital infrastructure
- ODD

4. Conclusions

FUTURE OF MOBILITY

- **The future of mobility is being shaped by:**
  - Decarbonisation
    - Alternatively-powered vehicles
  - Digitalisation
    - Connected and automated vehicles
    - New mobility solutions
    - Connected transport systems
    - Integrating transport modes

- **Cleaner, safer and smarter mobility eco-system**
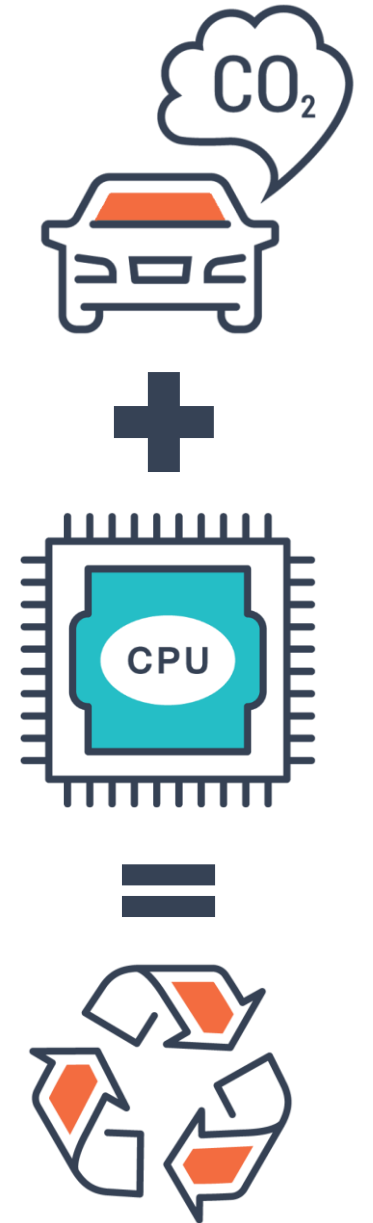
EU FRAMEWORK

- **Synchronisation of policy frameworks ongoing**
- **Testing, piloting, dialogue with infrastructure operators, telecoms and IT, suppliers, cities, users ongoing**
- **Focus on safety, trust, social acceptance of ICV**

INTERNATIONAL FRAMEWORK

World Forum for Harmonization of Vehicle Regulations (WP.29)

Working Party on Automated/Autonomous and Connected Vehicles (GRVA)

- **UN-ECE GRVA**
  - 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

- **Multi-pillar approach for the certification process**
  - Pillar 1: Audit/assessment
  - Pillar 2: Physical certification tests
  - Pillar 3: Real test drive

感謝您的關注 ！

ACEA | European Automobile Manufacturers Association

@ACEA_eu
www.ACEA.be

Joost Vantomme
Smart Mobility Director
jv@acea.be