

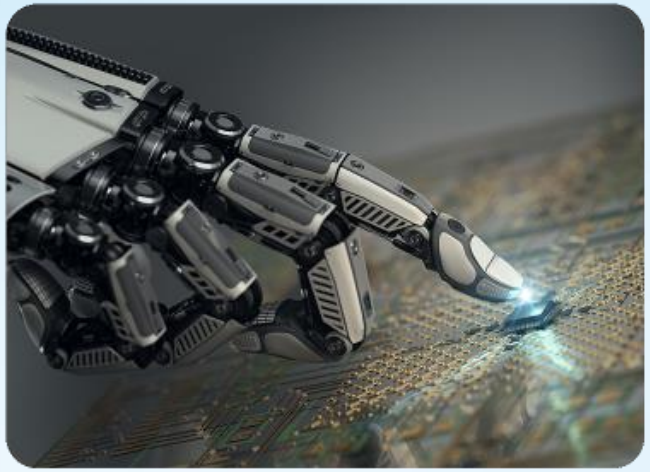

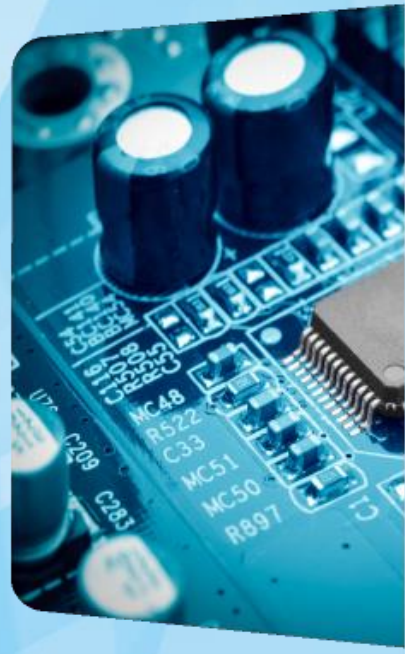

# IEEE European Public Policy Webinar 6
# EU mobility policy

**8 April 2020**
**2 pm CET**

IEEE

*The material contained in this presentation may reflect the opinions of its authors and not necessarily those of IEEE.*

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- Objective and content of the webinar
- The EU's approach to Mobility
- The major ongoing initiatives at the EU level
- Future policy, legislative, and regulatory developments
- IEEE activities and initiatives in the area of Mobility

# Objective and content of the webinar

# Objective and context of the webinar

- The objective of the webinar is to give IEEE members insights into the latest policy developments and future actions of the EU in the field of road mobility.
- The EU policy activity on mobility is vast. We will cover 3 clusters:
  - electrification of road transport (powertrains and charging infrastructure),
  - connectivity and data management,
  - vehicle safety and autonomous driving.
- Participants will also find out more about IEEE's work on mobility.

# EU approach to mobility

# EU approach to mobility

The **incentives** for EU policy are inspired by:

- European societal changes e.g. climate marches
- Member States policy agendas e.g. translation of national policy priorities to EU level
- Global developments, i.e. regulatory alignment and market developments in China, US, Japan. Key concern = upholding EU's competitiveness in the area of electrification and connected driving.

The **objectives** in EU (road) mobility policy are to:

- bring down emissions from road transport, especially CO2, in line with the Paris agreement to keep global warming below 2° Celsius.
- make Europe a world leader in the deployment of connected and automated mobility, to bring down the number of road fatalities, reduce emissions and congestion.

**How ?**

- Adapting the EU legal framework to meet the objectives. Key anouncement to watch: Smart and Sustainable Transport Strategy (Q4 2020).
- Stimulating investments in R&D through EU funding initiatives e.g. Horizon 2020 and Horizon Europe

# EU approach to mobility

EU strategies are not binding. They can be compared to a "to-do" list for the Commission.

Commissioner for Climate Action Timmermans

**EU Green Deal (announced December 2019)**

*Announced climate-neutrality principle*

**Smart and Sustainable Transport Strategy (expected Q4 2020)**

*Will set out EC priorities to make road transport cleaner and more connected. Will most likely underline importance of already on-going initiatives (see below).*

Commissioner for Transport Valean

Electrification of transport

- Increasing EV incentives
- Increasing targets EV charging infrastructure

Connected driving + data management

Ensuring wider access to vehicle data to increase connectivity of vehicles with vehicles and with infrastructure

*<u>Note:</u> The European Commission's approach to autonomous driving is bottom-up: first allow industry to research, develop and test autonomous vehicles before regulating.*

# EU approach to mobility – players to watch in 2020

| IEEE area of interest | | Commissioners | Directorate-Generals | Competences |
|---|---|---|---|---|
| Electrification of transport | EV incentives<br>EV charging |  <br>Commissioner for Climate Action Timmermans | DG Clima | CO2 emissions standards Regulations (cars + HDV) |
| Connected driving + data management | Connectivity + access data<br>Access to RMI data only |  <br>Commissioner for Transport Valean | DG Move | Alternative Fuels Infrastructure Directive<br>Cooperative Intelligent Transport Systems Directive |
| Vehicle safety + autonomous driving | Vehicle safety |  <br>Commissioner for Internal Market Breton | DG Grow | General Vehicle Safety Regulation<br>Type Approval Directive |

# Major on-going initiatives in EU mobility policy

# Major on-going initiatives in EU mobility policy

**Electrification of road transport**

Mind the EU principle of technology-neutrality. The EU cannot promote one type of fuel or powertrain over another.

## What are we talking about ?

- Electrification of powertrains, both for light-duty and heavy-duty vehicles.
- Electric vehicle charging infrastructure.
  - ✓ Closely related: “smart charging”

## Key pieces of EU legislation

- Electrification of powertrains:
  - CO2 emissions standards for cars and vans
  - CO2 emissions standards for heavy-duty vehicles

- Electric vehicle charging infrastructure
  - Alternative Fuels Infrastructure Directive
  - Energy Performance of Buildings Directive

# Major on-going initiatives in EU mobility policy

## Electrification of road transport

What does the legislation say, and what is their status ?

| Initiatives | EC lead | Key provisions on electrification | Status | Next steps |
|---|---|---|---|---|
| **CO2 emissions standards for cars** | DG Climate Action | Incentive for OEMs to produce X % of zero- and low-emission vehicles as part of their fleet by 2025 and 2030 | Adopted | Review before June 2021 as mandated by the Green Deal |
| **CO2 emissions standards for heavy-duty vehicles** | | | | Review in 2022, possibly include e-buses ? |
| **Alternative Fuels Infrastructure Directive** | DG Move | Sets targets for publicly available charging infrastructure for all vehicles. | Under evaluation | Legislative proposal due in 2021 |
| **Energy Performance of Buildings Directive** | DG Energy | Sets targets for private charging infrastructure, in buildings and parking lots. | Adopted | Review before 2026, but possibly (!) before due to re-alignment of EU legislation with climate ambition of Green Deal |

# Major on-going initiatives in EU mobility policy

**Connectivity and data management**

## What are we talking about ?

- Vehicle-to-vehicle (V2V) connectivity and vehicle-to-infrastructure (V2X) connectivity
- Data management = access to vehicle data

## Key pieces of EU legislation

- V2V + V2X
  - Cooperative and Intelligent Transport Systems Directive (C-ITS Directive)

- Data management
  - Type Approval Framework Directive
  - Common European mobility data space

# Major on-going initiatives in EU mobility policy

## Connectivity and data management

What does the legislation say, and what is their status ?

| Initiatives | | EC lead | Key provisions on connectivity and data management | Status | Next steps |
|---|---|---|---|---|---|
| Common European Mobility Data Space | **Cooperative and Intelligent Transport Systems** | DG Move | All functional, technical, organisational or services provisions to address the compatibility, interoperability and continuity of ITS solutions e.g. traffic information | Adopted | Review in 2021 to ensure data availability, reuse and interoperability |
| | **Type Approval Directive** | DG Grow | Defines access to repair and maintenance information data only | New Type Approval Regulation applies from Sep 2020 | Review of Type Approval Regulation in 2021 |

# Major on-going initiatives in EU mobility policy

The horizontal nature of new technologies e.g. smart charging indicate that the current repartition of competences within Commission probably requires an update !

Smart charging

**Example of a hybrid cases on electrification and data management**

- Electrification of transport angle = smart charging is covered in Energy Performance of Buildings Directive (guidance note) + will be addressed in Alternative Fuels Infrastructure Directive review

  ✓ Many stakeholders, including ACEA, T&E and Eurelectric call for smart charging as a “base” EV charging technology to ensure grid stability over time

- Data management through smart charging i.e. access to data of end-consumer, will be dealt with by DG Energy through Electricity Directive’s secondary legislation. Start of work in April 2020.

# Major on-going initiatives in EU mobility policy

**Vehicle safety and autonomous driving**

## What are we talking about ?

- The Commission understands that vehicles need to be safe before they can become autonomous
- Autonomous vehicles: 5 levels of autonomy, Commission wants levels 3 + 4 to be tested and “market-ready” in 2020. The Commission is not going to regulate this area as it is in a “wait-and-see” mode: tests of autonomous vehicles will identify failures and regulatory gaps.

## Key pieces of EU legislation

General Vehicle Safety Regulation

# Major on-going initiatives in EU mobility policy

**Vehicle safety and autonomous driving**

What does the legislation say, and what is the status ?

| Initiative | EC lead | Key provisions on vehicle safety | Status | Next steps |
|---|---|---|---|---|
| **General Vehicle Safety Regulation** | DG Grow | All technologies that allow for safe autonomous driving: lane keeping assist, intelligent speed assistance, autonomous emergency braking,etc. Including cybersecurity ! | Adopted | Testing requirement and technical details to be developed per technology in subsequent legislation throughout 2020-2021 |

# Future policy, legislative, and regulatory developments

# Future policy, legislative, and regulatory developments

*Key: electrification of transport – connected driving + data management – vehicle safety + autonomous driving*

On-going evaluation EV charging infrastructure requirements (public) in AFID

Publication legislative proposal AFID

Scrutiny starts by EP + Member States

Start review EV incentives in CO2 emissions standards Regulation

Publication legislative proposal CO2 Reg

Scrutiny starts by EP + Member States

Publication Smart and Sustainable Transport Strategy

Start review of Type Approval Regulation and Cooperative and Intelligent Transport Systems Directive

Technical legislation on vehicle safety requirements to allow autonomous driving

Q2 2020 → Q3 2020 → Q4 2020 → Q1 2021 → Q2 2021 → Q3 2021

# IEEE activities and initiatives in the area of mobility

## *Intelligent, Connected & Autonomous Vehicles*

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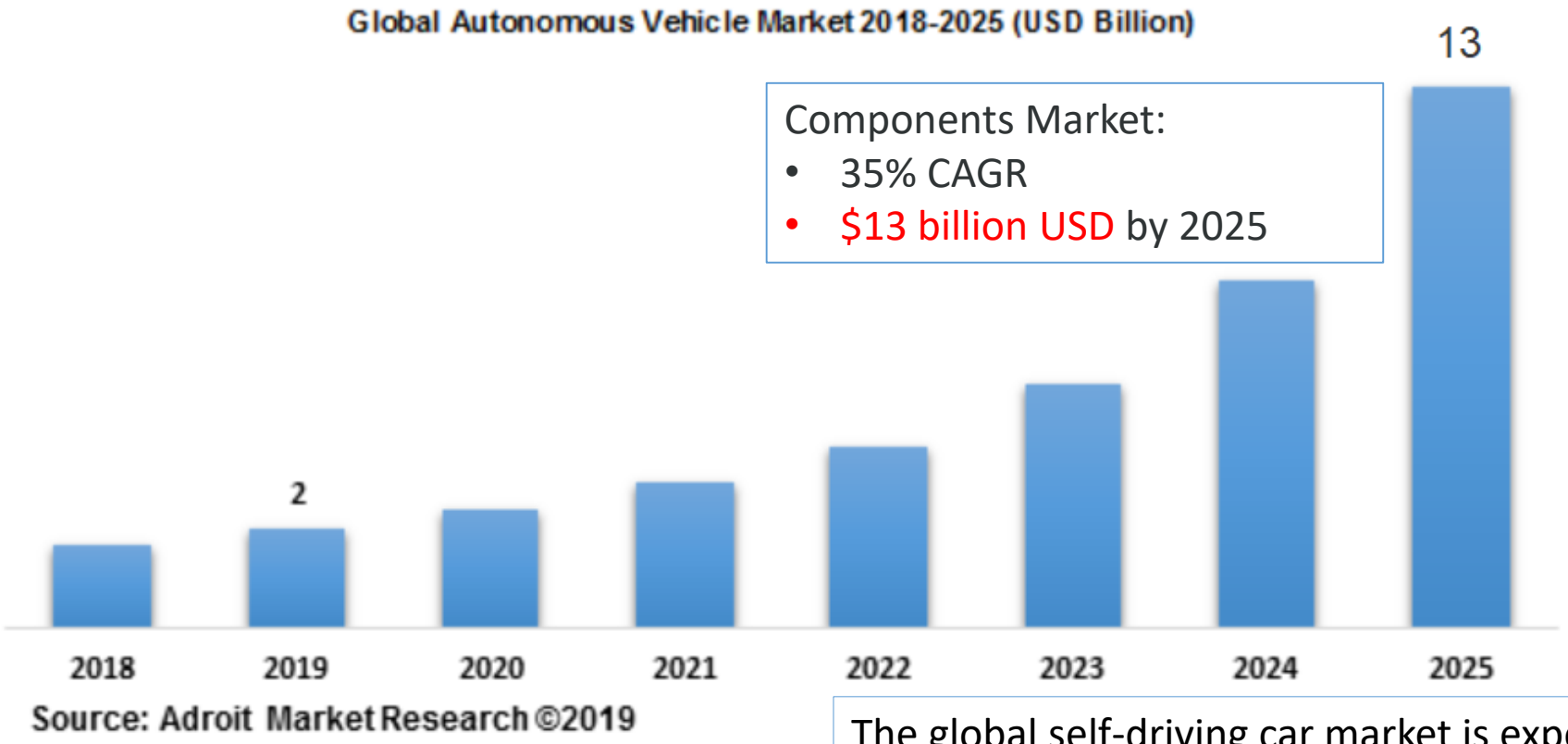
# Drivers Perspective

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) AUTOMATION LEVELS

Full Automation

| 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **No Automation** | **Driver Assistance** | **Partial Automation** | **Conditional Automation** | **High Automation** | **Full Automation** |
| Zero autonomy; the driver performs all driving tasks. | Vehicle is controlled by the driver, but some driving assist features may be included in the vehicle design. | Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times. | Driver is a necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice. | The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle. | The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle. |

# Commercial Perspective




Components Market:
- 35% CAGR
- $13 billion USD by 2025

**Autonomous Vehicle Market:**

Components
- Sensors, S/W & H/W, Maps

Cars
- All Levels

Services
- Mobility

The global self-driving car market is expected to expand at a CAGR of 36.2%, leading to global revenue of 173.15 billion USD by 2023.
(Source: *Kenneth Research "Global Self-driving Car Market (2018-2023)"*)

It is expected that Level 4 and 5 autonomous cars will become a large market worldwide by 2030 at 60 billion USD. *(Source: Statista 2020)*

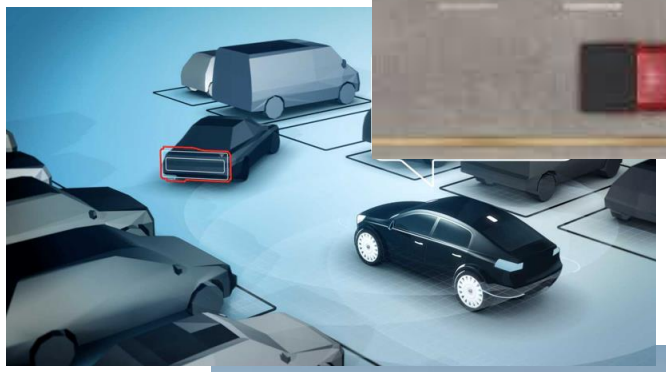
# Reality Perspective

Benefits:

- Zero accidents
- No traffic jams
- Mobility for all
- Automated parking system
- In-vehicle entertainment

Challenges:

- Public and driver/passenger safety
- Social acceptance and trust
- Technology
- Business case



# Industry Activities

European car industry:

- Volkswagen invests $54.2 billion (2019-2024)
- Daimler, BMW and Audi, invests each $3 billion USD
  - Digital mapping unit

Source *International Business Times*

Standard development organizations:

- SAE
- ISO
- ETSI
- CEN
- ITU

# IEEE Standards: Automotive Portfolio

## *A few examples*

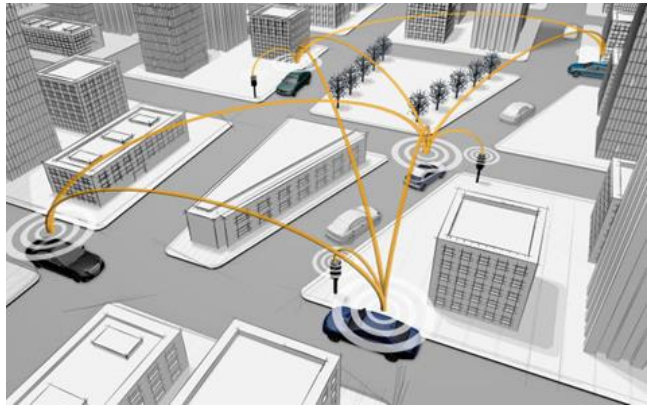
e.g. 802.1/802.3: TSN

e.g. P2040: Taxonomy, Architecture, Testing

e.g. P2020: Camera image quality test

e.g. P7001: Data Transparency
P7003: Algorithmic Bias
P7011: Trustworthiness of Data


Zero accidents now: e.g. 802.11 NGV, ITS G5 (EU) and WAVE (US)



# IEEE Society Engagement: Conferences and Publications

**Computer Society** Technical Committees (TCs):

- Security and Privacy

**Computer Society** Special Technical Communities (STCs):

- Autonomous Driving Technologies
- Big Data
- Cyber Security

**Vehicular Technology** Society Technical Community

- Connected Vehicles

**General** Technical Communities:

- TechEthics™
- Big Data
- Cybersecurity
- Future Networks

# IEEE Partnerships Brings Collective Value

Global Standards Collaboration

OCEANIS: Open Community for Ethics in Autonomous and Intelligent Systems https://ethicsstandards.org/

# IEEE European Public Policy Committee WG on ICT

EPPC Policy Concept paper on **Intelligent Connected Autonomous Vehicles** (ICT WG)
Recommendations:

- Privacy and Data Protection
  - Address critical elements data repository, ownership, and protection
- Cybersecurity
  - Combat weakness and to prevent unauthorized access
- Public Safety (Driver and Pedestrian)
  - Ensure mobility is safe in European driving conditions
- Product Safety
  - Guarantee of AV, test specifications and lifecycle management
- Liability
  - Distinguish driver responsibilities, system responsibilities and external factor dependencies

Link: https://drive.google.com/file/d/1TZDX17VyBEMbEXDH_VywqmfmqZVjiLH5

# Get Involved!

- Call for Engagement for the paper on ICAVs issued March 23rd 2020
- The EPPC has recently launched a Call for Engagement in order to create a group of contributors and commentators for the development of the position statement on autonomous vehicles.
- The main deliverable of this process will be a short and concise policy document to be circulated amongst, and discussed with, relevant policy makers and other stakeholders in Europe with a view to shaping associated policy options.
- The adoption of this EPPC position statement is expected by early 2021.
- Should you wish to be actively involved in the development of this policy document, please respond to the Call for Engagement no later than **Wednesday 15 April 2020** - https://connect.ieee.org/MU0H0Q0OGqona00G304P0r3

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# IEEE European Public Policy Committee WG on Energy

**Position Statement on "E-mobility: Smart Charging" (under approval by IEEE GPPC)**

The IEEE EPPC endorses the goal that a smart and harmonized pan-European network of charging stations for electric vehicles should be established.

Specific recommendations include:

1. Foster the large-scale development of a unified network of electric charging facilities, featuring the possibility for users to either charge their vehicles - grid to vehicle (G2V) - or provide energy to the electric grid - vehicle to grid (V2G).
2. Provide financial stimuli to:
   a) research entities and manufacturers (innovative power conversion and power transfer technologies);
   b) private and public right entities (implement physical smart charging infrastructures);
   c) DSOs (manage the energy distribution network, including coordination with foreign DSOs).
3. Develop regulations requiring new public or commercial buildings to include fast and ultra-fast chargers with smart charging capabilities.
4. Assign top priority to technical standardization initiatives dealing with interoperable smart charging solutions.
5. Increase funding opportunities for new research and innovation initiatives.
6. Encourage relevant stakeholders, namely DSOs and car manufacturers, to take a proactive stance for example by providing beneficial taxation plans.
7. Accelerating the introduction of cheaper fast charging devices.


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