Status report on WP.29 activities related to Automated and Connected Vehicles

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Content

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

• Automated vehicles – strategic and organizational views

• Requirements for automated vehicles – as of today
Some transport related challenges potentially addressed by AVs:

- Environmental issues
- Road safety tragedy
- Urban transport
- Access / inclusion
- ...
UNECE and vehicle regulations

What is WP.29 doing?

- Emissions of pollutants and CO₂
- General safety
- Passive safety
- Noise and tires
- Automated/autonomous and connected vehicles
- Lighting and light signalling

Our structure:
- WP.29, 6 working groups, ~40 informal working groups

Notes:
- Some countries not marked here apply unilaterally (some of) the UN vehicle Regulations
- Concept of mutual recognition of approvals for a number of countries
Our stakeholders

~60 UN member States
(Contracting Parties)

Manufacturers:

Suppliers:

Testing centers

Consumer’s representatives:

Road and Public Transport Federations:

Observers & others

Standard Developing Organizations:
Content

• Presentation of WP.29 and GRVA

• Automated vehicles – Strategic and organizational views

• Requirements for automated vehicles
Framework document for automated vehicles

Authors

Purpose
Guides WP.29’s groups
Programme management

Highlights
Safety vision
Key safety elements
Timeline

Adopted in June 2019
Safety vision

According to the Framework Document on Automated Vehicles:
(Adopted by WP.29 in June 2019)

• The level of safety to be ensured by automated vehicles:
  ➔ “An automated vehicles shall not cause any non-tolerable risk”

• Automated vehicles, under their Operational (Design) Domain (ODD), shall not cause any traffic accidents resulting in injury or death that are reasonably foreseeable and preventable.
Priorities for the near future

• Further development of a global Framework Document for Automated Vehicles

• Functional Requirements for Automated Vehicles (FRAV)

• Validation Method for Automated Driving (VMAD)

• Data Storage System for Automated Driving (DSSAD) vehicles + EDR

• Cybersecurity and (OTA) software updates
Focus on the following key safety elements:

- System safety
- Failsafe Response
- HMI /Operator information
- OEDR (Functional Requirements)

Delivery:

- Common functional requirements based on existing national/regional guidelines
- other relevant reference documents
Focus on the following key safety elements:
- OEDR (Assessment Method)
- Validation for System Safety (including CEL)

Delivery:
- Review of the existing and upcoming methods
- Propose way forward for the assessment of AD
Focus on the following key safety elements:
• Cyber security
• Software Updates

Ambition:
Completion in March 2020
**EDR / DSSAD**

Event Data Recorder and Data Storage System for Automated Driving

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**Leaders**

- [Japanese flag](#)
- [Netherlands flag](#)
- [USA flag](#)
- [OICA logo](#)

**Secretariat**

- [Image of camera](#)

**EDR**

- Not only for ICVs
- Harmonization work
- C-EDR, US-EDR
- Accident reconstruction

**DSSAD**

- For ICVs
- Purposes
  - Research
  - Monitoring
  - Liability
  - Legal responsibility

**Outcome**

- EDR vs. DSSAD ✓
- DSSAD ALKS level 3

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**Focus on the following key safety elements:**

- DSSAD/EDR

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**Delivery:**

- DSSAD for Lane Keeping systems (levels 3/4)
- DSSAD / EDR
Content

• Presentation of WP.29 and GRVA

• Automated vehicles – Strategic activities

• Requirements for automated vehicles – as of today
UN Regulation No. 79 (Steering)

• Scope (active safety and ADAS):
  – Steering systems, incl.:
    – Emergency Steering Function
    – Corrective Steering Function
    – [Remote Maneuvering Systems]
    – Automatically Commanded Steering Function
      • Low speed «ACSF of category A» e.g. RCP
      • Lane keeping «ACSF of category B1» (Level 2)
      • Lane change «ACSF of category C» (Level 2)
  • ADAS covered since November 2017
Automated Lane Keeping Systems – ALKS

• First Regulation in the area of vehicles of Level 3 and higher
  Use case
  – Motorway
  – Low speed
  – < 60 km/h

• Safety related provisions highlights:
  – Driver Monitoring Function
  – Emergency manoeuvre
  – Transition demand
  – Minimum Risk Manoeuvre
  – Activation criteria and system override provisions
  – …
Feedback received – amendments coming soon

• France, Germany, Korea
  – Analyzed UN R79
  – Performed tests
  – Proposed improved testing procedures

• Automotive sector
  – Vehicle manufacturers found ACSF C too conservative
  – They asked for parameter adjustments
  – They proposed an alternative for the HMI during a lane change maneuver ✓

• Demo in September 2019
  Contrast:
  - Strict traffic rules application and
  - Real driving
Discussion items

**HD maps / Road databases**

- Exchange of views
  - Localization
  - Vehicle automation
  - Redundancies
  - AEBS (static objects)

**Vehicle connectivity (C-V2X)**

- Agreement that it belongs to the work programme
  (Mid/long term)
Ongoing discussion items

Cyber security (OTA)
- Cyber security management
- Response plan
- (Access to data)
- Software management

Smart keys (card / 3rd party device)
- Authorization management
- Deactivation of key(s)
- Boundary of Functional Operation

Automated vehicle performance
- Safety evaluation
- Monitoring

These aspects go beyond the new vehicle performance
- Vehicle Type Lifecycle requirements
- Vehicle lifetime requirements
Only for passenger cars?

• The industry communicates that:
  – They need regulatory clarity for **Heavy Duty Vehicles** too
  – Systems identified as Level 3
  – Operating on motorways at speed below [60] km/h

• Ongoing discussions related to shuttles
  – Based on experiences gathered by the CPs
THANK YOU VERY MUCH
FOR YOUR ATTENTION

UNECE

http://www.unece.org/automated-vehicles

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