The importance of UNECE Regulations for the EU legislation on Automated driving

SESSION 1:
Regulatory advances in highly automated driving

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Who does what in the EU for automated driving?

- **Product legislation is mostly developed at EU level**
  - Vehicle type approval
  - Product liability/General product safety
  - Road worthiness tests

- **Liability, traffic rules and infrastructure are mostly developed at Member State level**
  - Experimentations covered at national level
  - Some traffic rules are harmonized at UN level (Vienna and Geneva conventions).
EU Type approval legislation

- Mandatory since 1998 for cars
- Fully harmonized requirements: once certified, registration is valid everywhere in the EU.
- Heavily relies on UN regulations for technical rules.
- Third party certification
- Covers also market surveillance
EU approach on Automated driving

EU strategy adopted in 2018:
- Common vision
- On road Large scale Testing
- EU Guidelines
- New EU legal framework for AD

Driver role

MONITORED DRIVING
- Driver is continuously exercising longitudinal OR lateral control
- Lateral or longitudinal control is accomplished by the system
- LEVEL 0
- Driver only

TEMPORARY HANDS OFF
- Driver has to monitor the system at all times; must always be in a position to resume control
- System has longitudinal and lateral control in a specific use case
- LEVEL 1
- Assisted

NON-MONITORED DRIVING
- Driver does not have to monitor the system at all times; must always be in a position to resume control
- System has longitudinal AND lateral control in a specific use case. System recognises the performance limits and requests driver to resume control within a sufficient time margin
- LEVEL 2
- Conditional automation

- System is not required during defined use
- System can cope with all situations automatically in a defined use case
- LEVEL 3
- High automation

Eyes off
- Hands off
- LEVEL 4
- Full automation

Eyes on
- Hands on
- LEVEL 5
- Already on the market

2020-2030

Driver role

Vehicle role

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2020-2030

Driver role

Vehicle role
EU guidelines on automated vehicles

- **Main safety principles:**
  - 1. SYSTEM PERFORMANCE IN THE AUTOMATED DRIVING MODE (Including Duty Of Care Principles)
  - 2. DRIVER/OPERATOR/PASSENGER INTERACTION
  - 3. TRANSITION OF THE DRIVING TASKS
  - 4. MINIMUM RISK MANOEUVRE
  - 5. INSTALLATION OF EVENT DATA RECORDERS
  - 6. CYBERSECURITY
  - 7. SAFETY ASSESSMENT AND TESTS
  - 8. INFORMATION PROVISION TO AUTOMATED VEHICLE USERS

- **Annex:** INFORMATION TO BE PROVIDED FOR TYPE APPROVAL

- **Supported by Member States on 12 February 2019**
- **Publicly available**

- No request for exemption of Level 3-4 has been filled until now.
New EU Vehicle safety regulation

- Proposed as part of the 3rd Mobility Package on 17 May 2018
- Promote driver assistance systems
- Provide the legal framework for Connected and Automated Driving
- Agreed on 26 March 2019.
- Applicable from mid-2022
- Now developing the technical measures for 2021
# Technical rules for EU Vehicle safety regulation

## 1<sup>st</sup> phase of implementation (A/B)
- ✓ Intelligent speed assistance (ISA)*
- ✓ Emergency lane keeping (cars and vans)
- ✓ Advanced emergency braking for stationary/moving vehicles (cars and vans)
- ✓ Event data recorder (cars and vans)*
- ✓ Driver drowsiness and attention warning*
- ✓ Alcohol interlock installation facilitation*
- ✓ Emergency stop signal*
- ✓ Reversing detection*
- ✓ Blind spot information system (trucks and buses)
- ✓ Pedestrians and cyclists collision warning (trucks and buses)
- ✓ Tyre pressure monitoring system (vans, trucks and buses)
- ✓ Cybersecurity & software update

## 2<sup>nd</sup> phase of implementation (C)
- ✓ Advanced emergency braking for pedestrians and cyclists (cars and vans)
- ✓ Advanced driver distraction warning
- ✓ Enlarged head impact zone (cars and vans)
- ✓ Tyres in worn condition
- ✓ Event data recorder (for automated vehicles)
- ✓ Driver availability monitoring (for automated vehicles) (ALKS)
- ✓ Platooning (for automated trucks)

## 3<sup>rd</sup> phase of implementation (D)
- ✓ Direct vision requirements (trucks and buses)
- ✓ Event data recorder (trucks and buses)*

Pedestrian protection for small series:
- ➢ mid-2028 (new types)
- ➢ mid-2034 (new vehicles)

<table>
<thead>
<tr>
<th>new types</th>
<th>new vehicles/parts</th>
<th>6 July 2022</th>
<th>7 July 2024</th>
<th>7 July 2024</th>
<th>7 July 2026</th>
<th>7 Jan 2026</th>
<th>7 Jan 2029</th>
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Supplementary legislation to be adopted by:
- ✓ 6 April 2021
- ✓ 7 April 2023
- ✓ 7 September 2024

* Detailed technical requirements to be set out in Delegated Acts.

Which EU approach for AD?

1. The design/development/safety processes shall address the relevant risks linked to traffic scenarios, human factor, perception, cybersecurity, and failures. Safety concept +the residual level of risk should be statistically better than human driving.

2. Testing (simulation, track, on road) shall confirm basic driving capabilities of the vehicles (to drive safely, to avoid crashes)

3. Confirmation of the residual risk after market introduction: reporting

Associated requirements

- New competences of the authorities (audit)
- Transparency on audits
- Less fixed parameters in testing
# EU involvement in the UN

## Vehicle rules

### Done:
- June 2020: Automated lane keeping at low speed (below 60 km/h), cyber security and software updates.

### Next:
- Functional requirements, New assessment method, EDR.
- ALKS extension

## Traffic rules

### Done:
- Systems assisting the driver
- Recommendations for AD
- Sept 2020: Amendment to the Vienna convention to allow automated driving systems as a driver

### Next:
- Allowed other activities for levels 3 and 4.
- Driver outside the vehicle.
- Specific rules for driverless vehicles in a new convention?

+ Need to amend national/regional legislation (e.g. liability, traffic rules)
European Commission
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Thanks for your attention
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