

# Recent discussions and prospects of Automated / Autonomous and connected vehicles at UNECE - GRVA

Richard Damm  
Chairman of UNECE Working Group GRVA  
International Symposium on Automated Driving  
Dec. 16, 2022, Tokyo



## **Global Activities on automated driving at the UNECE**

- Structure of WP.29
- Main activities and prospects at GRVA
- Recent discussions at GRVA and WP.29

## **Global Activities on automated driving at the UNECE**

- **Structure of WP.29**
- Main activities and prospects at GRVA
- Recent discussions at GRVA and WP.29

# UNECE - Multilateral Agreements



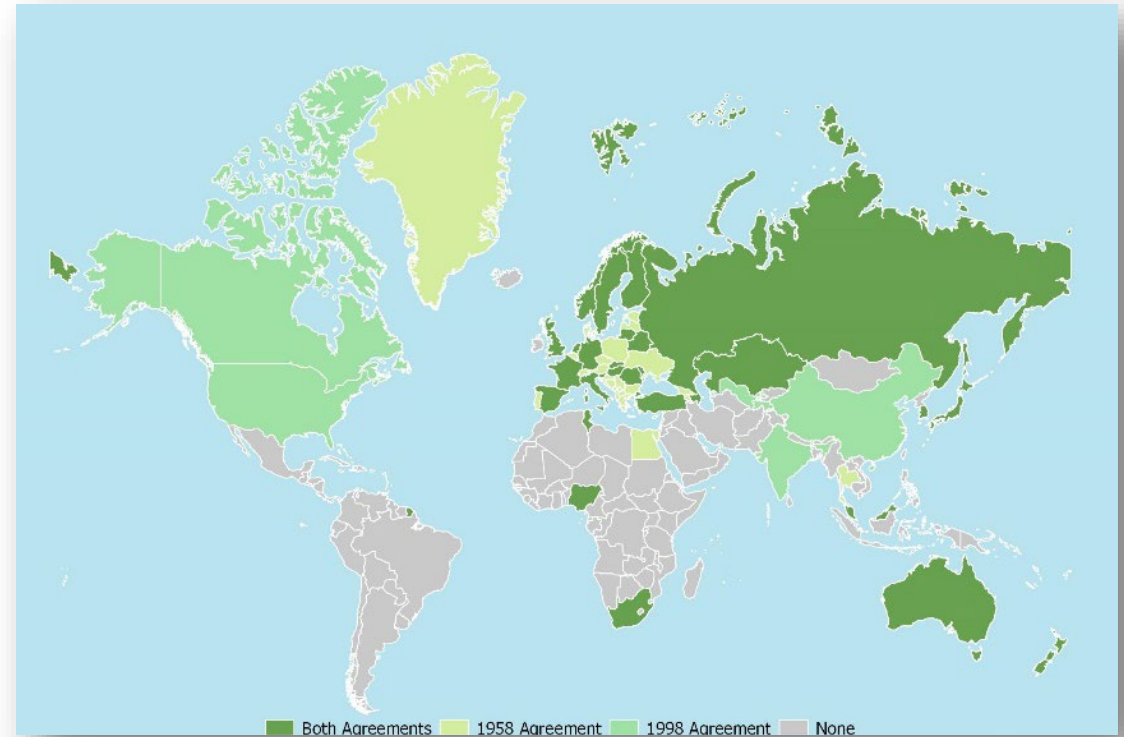
## Agreements for Vehicle Regulations

### 1958 Agreement:

- **UN Regulations**
- Directly applicable by industry
- Mutual recognition of Type Approvals

### 1998 Agreement:

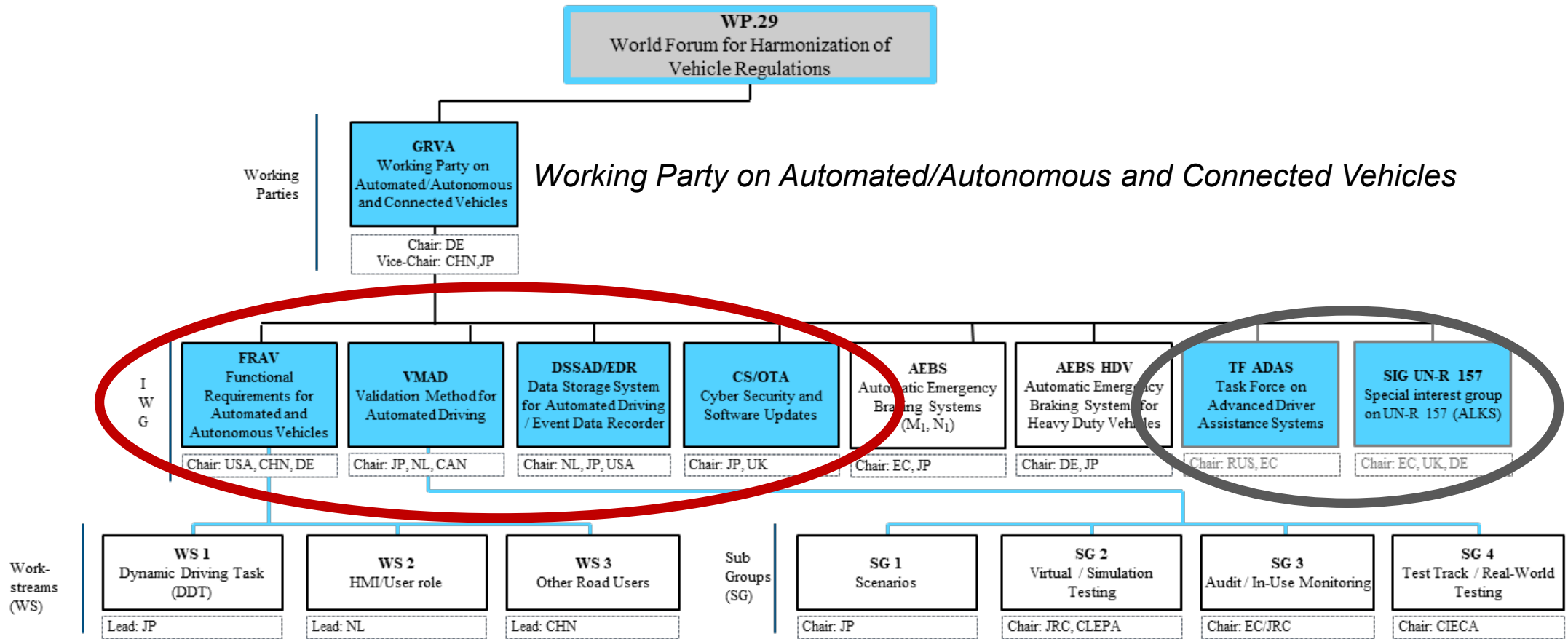
- **UN Global Technical Regulations**
- Requires transposition in national law
- No administrative procedures- suitable for
  - Self Certification
  - Type Approval



**WP.29 – World Forum for Harmonization of Vehicle Regulations administers both agreements**

# UNECE WP.29 Structure for AD

## WP.29 Structure linked to Automated Driving



**1958 & 1998 Agreements**

**1958 Agreement**

# Stakeholders

## Stakeholders at UNECE WP.29



## Global Activities on automated driving at the UNECE

- Structure of WP.29
- **Main activities and prospects at GRVA**
- Recent discussions at GRVA and WP.29

# Framework document on AV

## Framework document for automated/autonomous vehicles

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

- Provides guidance to WP.29 subsidiary Working Parties (GRs) by identifying key principles for the safety and security of automated/autonomous vehicles of levels 3 and higher
- Guidance and resolutions for automated/autonomous vehicles shall be conducted within the contexts of both the 1958 Agreement and 1998 Agreement.
- Defines safety vision:  
    **“An automated vehicle shall not cause any non-tolerable risk”**
- Defines key issues and work priorities
- Sets activities, deliverables and timelines



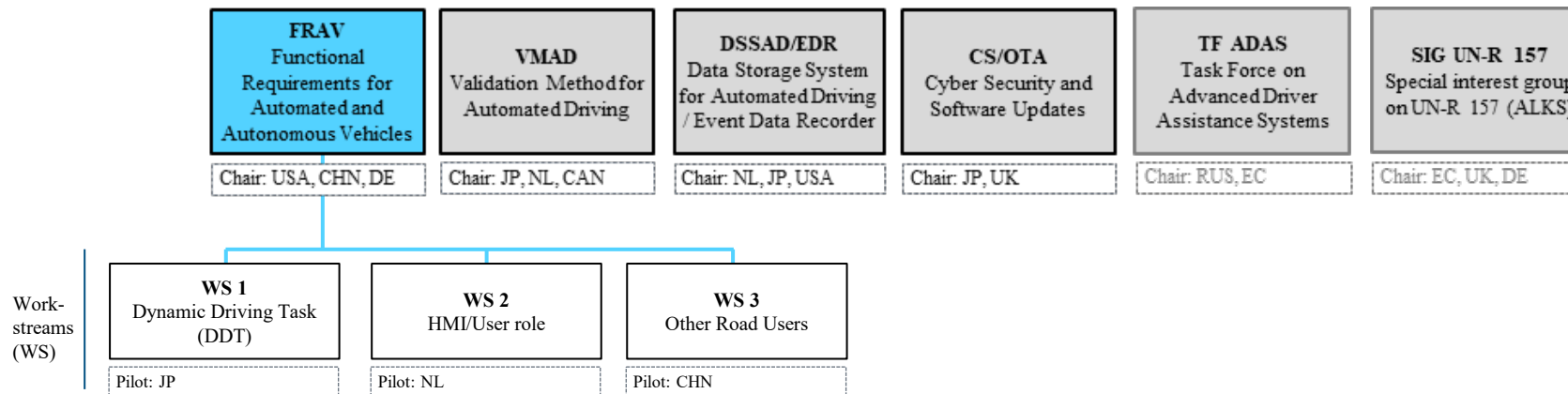
## Authors



**Latest amendment** of the schedule: [WP.29-188-12e.pdf \(unece.org\)](#)



# Global Activities under the 1958 and 1998 Agreements



## FRAV - Functional Requirements for Automated and Autonomous Vehicles

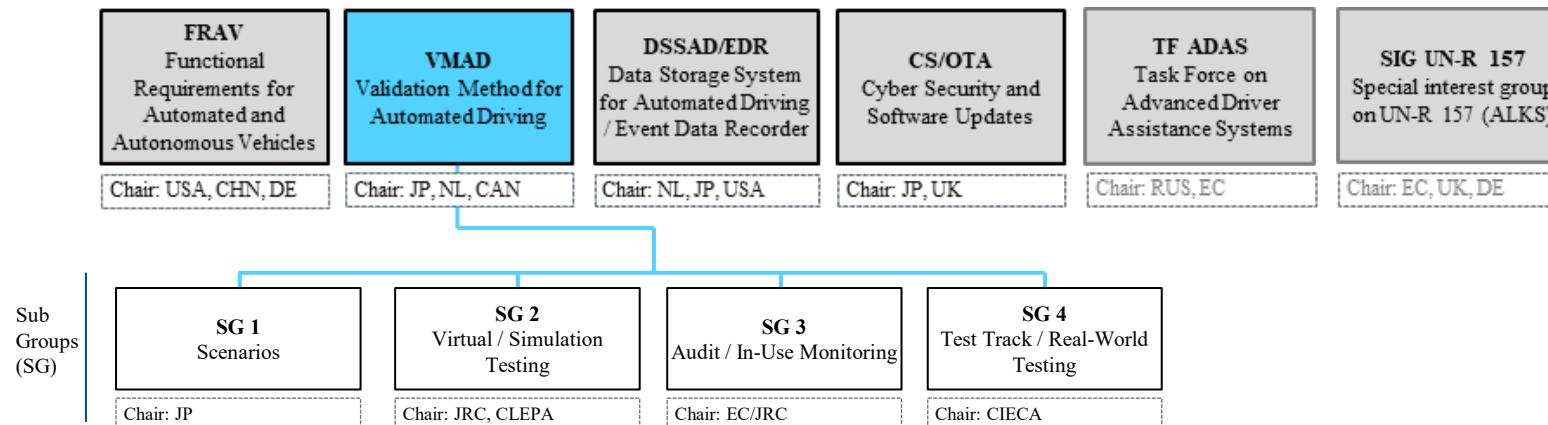
- 3 work streams:
  - Dynamic Driving Task
  - HMI / User role
  - Other road users
- Drafting ADS safety requirements
- Close collaboration with VMAD



**Leaders**



# Global Activities under the 1958 and 1998 Agreements



## VMAD – Validation Method for Automated Driving

- 4 Subgroups:
  - Scenarios
  - Virtual / Simulation
  - Audit / In-service monitoring
  - Test track / Real-world testing
- New approach in assessing the performance of automated functions/systems
- Close collaboration with FRAV



# Global Activities under the 1958 and 1998 Agreements

## Future schedule of FRAV and VMAD (confirmed in Nov. 2022)

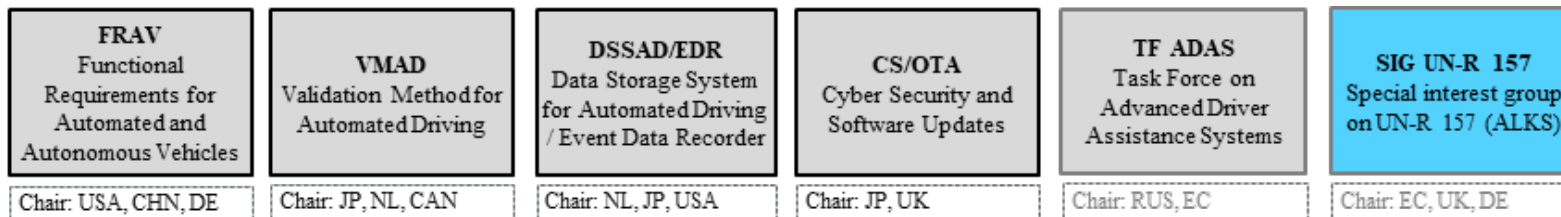
- Until June 2023:
  - Guidelines for regulatory requirements and for verifiable criteria for ADS safety validation
  - Guidelines for validation methods for assessment of ADS
- Until June 2024:
  - Pre-regulatory phase (one document with requirements, criteria and assessment)
- End of 2024: Decision on the start of drafting a global regulation

<b>FRAV</b> Functional Requirements for Automated and Autonomous Vehicles	<b>VMAD</b> Validation Method for Automated Driving	<b>DSSAD/EDR</b> Data Storage System for Automated Driving / Event Data Recorder	<b>CS/OTA</b> Cyber Security and Software Updates	<b>TF ADAS</b> Task Force on Advanced Driver Assistance Systems	<b>SIG UN-R 157</b> Special interest group on UN-R 157 (ALKS)
Chair: USA, CHN, DE	Chair: JP, NL, CAN	Chair: NL, JP, USA	Chair: JP, UK	Chair: RUS, EC	Chair: EC, UK, DE

# Activities under the 1958 Agreement

## UN Regulation No. 157 – Automated Lane Keeping System (ALKS)

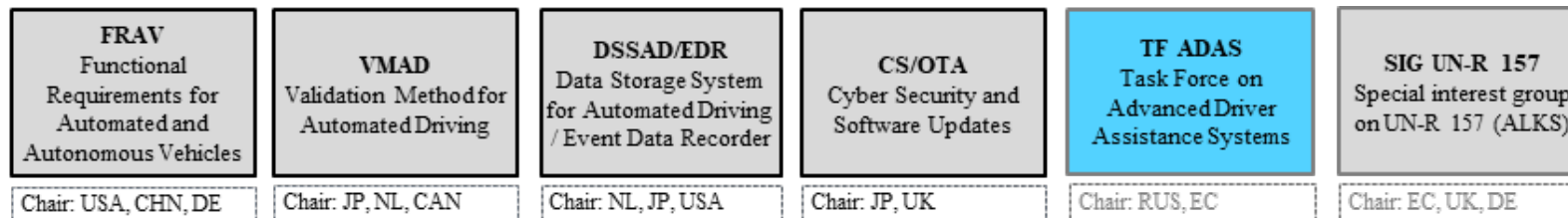
- Automation Level 3
- Scope: Cars, ODD: motorway, Max. speed: up to 60 km/h
- Entry into force:
  - Sept/Oct 2022:
    - Extension to other vehicle categories (Cars, trucks, buses)
  - Jan/Feb 2023 (for cars and light duty vehicles):
    - Speed up to 130 km/h
    - Automatic lane change manoeuvre
    - Minimum risk manoeuvre with lane change



# ADAS - Activities under the 1958 Agreement

## New UN Regulation – `DCAS` – Dynamic Control Assistance Systems

- Focus on systems combining longitudinal and lateral support
- Provide a safety net (minimum requirements) for any ADAS
- Consider combinations of ADAS (advanced driver assistance systems)
- Generic approach for ADAS performance/assessment with generic performance requirements
- Strong emphasis on driver involvement and HMI
- Finalisation until Sept. 2023



# Content

---

## **Global Activities on automated driving at the UNECE**

- Structure of WP.29
- Main activities and prospects at GRVA
- **Recent discussions at GRVA and WP.29**

# Recent Activities

---

- **Light-signalling for ADS vehicles** ([WP.29-188-10e.pdf \(unece.org\)](#))
  - WP.29 recommended that GRE (working group on lighting) conducts analysis and establishes principles related to light-signalling for ADS operational status
- **New vehicle categories for ADS**
  - WP.29 invited GRSG (working group on general safety) and GRVA to collaborate on developing new vehicle categories (or subcategories) dedicated to ADS (will be started in the first half of 2023)

# Recent Activities

---

- **Screening of UN-Regulations and UN-Global Technical Regulations for ADS**
  - GRs coordinate the screening to adapt regulations for ADS application
- **Vehicle-to-Vehicle Communication (V2V)**
  - WP.29 requested the IWG ITS (Informal Working Group on Intelligent Transport Systems) to perform preparatory activities and to explore the potential role of WP.29 related to V2V communication (Activity is started beginning of 2023)



---

Thank you for your attention

## Legal notice

Publisher:  
Krafftahrt-Bundesamt  
DE - 24932 Flensburg

Internet: [www.kba.de](http://www.kba.de)

Special information and advice:

Phone: +49 461 316-0  
Fax: +49 461 316-1650  
E-Mail: [kba@kba.de](mailto:kba@kba.de)

Version: Dec. 2022

Photo source: BMDV

All rights reserved. Reproduction and dissemination of this publication, including in parts or in digital form, is permitted provided that the Krafftahrt-Bundesamt is acknowledged as its source. This includes the dissemination of contents of this publication that have been obtained indirectly.

© Krafftahrt-Bundesamt, Flensburg

# Backup slides

---

# Global Activities under the 1958 and 1998 Agreement

EDR – event data recorder

DSSAD – data storage system for automated driving



Leaders

- EDR is not only for automated and connected vehicles
- DSSAD for automated vehicles
  - Purpose: research, monitoring, liability, legal responsibility
- Deliveries so far:
  - DSSAD for lane keeping system (level 3)
  - New UN Regulation for EDR
- Next step:
  - Develop DSSAD performance elements



<b>FRAV</b> Functional Requirements for Automated and Autonomous Vehicles	<b>VMAD</b> Validation Method for Automated Driving	<b>DSSAD/EDR</b> Data Storage System for Automated Driving / Event Data Recorder	<b>CS/OTA</b> Cyber Security and Software Updates	<b>TF ADAS</b> Task Force on Advanced Driver Assistance Systems	<b>SIG UN-R 157</b> Special interest group on UN-R 157 (ALKS)
Chair: USA, CHN, DE	Chair: JP, NL, CAN	Chair: NL, JP, USA	Chair: JP, UK	Chair: RUS, EC	Chair: EC, UK, DE

# Global Activities under the 1958 and 1998 Agreement

## UN Regulations

No. 155 – Cyber security

No. 156 – Software updates

- In force since January 2021
- Based on two pillars:
  - Testing of product
  - CS- and SU-management-system of manufacturer (certification)
- Manufacturers have to address cyber-security in a sustainable manner over the life cycle of the product
- Extension of cyber security to the 1998 Agreement → draft set of technical requirements was prepared, decision for a regulatory activity is still pending



Leaders



<b>FRAV</b> Functional Requirements for Automated and Autonomous Vehicles	<b>VMAD</b> Validation Method for Automated Driving	<b>DSSAD/EDR</b> Data Storage System for Automated Driving / Event Data Recorder	<b>CS/OTA</b> Cyber Security and Software Updates	<b>TF ADAS</b> Task Force on Advanced Driver Assistance Systems	<b>SIG UN-R 157</b> Special interest group on UN-R 157 (ALKS)
Chair: USA, CHN, DE	Chair: JP, NL, CAN	Chair: NL, JP, USA	Chair: JP, UK	Chair: RUS, EC	Chair: EC, UK, DE