

IWG on FRAV

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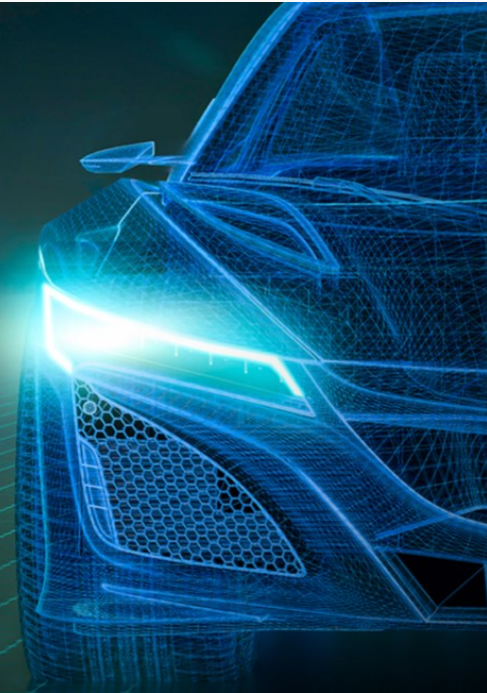
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2021 Future Networked Car symposium



SESSION 1:

**Regulatory advances in
highly automated
driving**



UNECE

Introduction



- Leadership



Chunmei Chen, China



Ezana Wondimneh, United States of America



Richard Damm, Germany

- Secretary



John Creamer, American Automotive Policy Council

- Report to GRVA, and close connection with VMAD

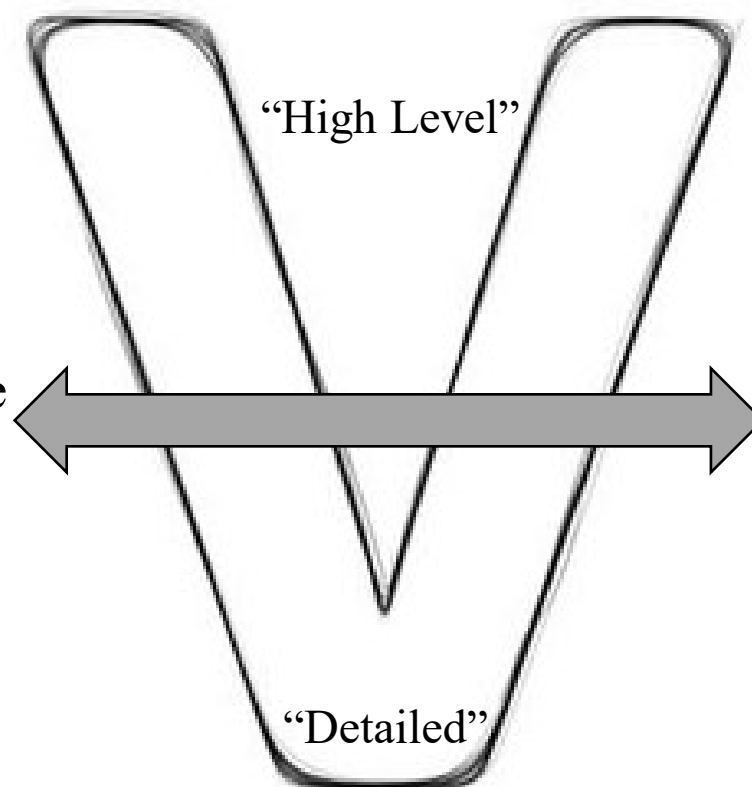
Coordination

REQUIREMENT
DEFINITION

FRAV

Pass/Fail Performance
Requirement(s)

- ADS (SAE Level 3+ driving automation): Capable of performing all the functions required to operate a vehicle in traffic



ASSESSMENT
METHODOLOGY

VMAD

Test/Assessment
Procedure(s)

- Automated Driving Systems (ADS) present challenges: Vehicle lifetime safety of software and data-driven systems operating in complex environments.

The ALKS regulations reflect the application of FRAV and VMAD methods in specific situations.

Objectives



- Functional Requirements for Automated Vehicles (FRAV)
 - Safety requirements covering all ADS configurations (SAE Levels 3-5)
 - Improve road transport, Performance-based, Technology-neutral, Measurable, Feasible, and Socially acceptable.
- Main objectives
 - ADS should drive safely
 - ADS should interact safely with the user
 - ADS should manage safety-critical situations
 - ADS should safely manage failure modes
 - ADS should maintain a safe operational state

Outcomes so far



- Dealing with ADS diversity
 - Each ADS assessed based on its intended uses and limitations on its uses
 - The manufacturer describes each ADS and its features
 - FRAV defining elements to be addressed in these descriptions
 - Intended use(s) and ADS configuration
 - Limitations on the ADS use, including ODD conditions and other limits of operation
- Dealing with driving diversity
 - FRAV has derived 40 aspects to be addressed in performance requirements
 - These aspects will be elaborated to provide verifiable specifications

In the near future

- ADS descriptions and documentation
 - ODD conditions that may impact ADS driving performance
 - ODD boundaries beyond which the ADS may not be designed to operate
 - User roles and responsibilities for correct use of a given configuration
 - Means used to enable performance of DDT functions
- Performance requirements
 - Functions required to perform the DDT
 - ADS nominal driving behaviors and compatibility with human expectations
 - ADS users, roles/responsibilities, and user interfaces/interactions
 - Other road users and their ADS interaction needs
 - ADS responses to critical events
 - Management of failures and assurance of operational safety



Thank you

**World Forum for Harmonization of Vehicle Regulations (WP.29)
Working Party on Automated/Autonomous and Connected Vehicles (GRVA)**