

# 15<sup>th</sup> Session Status Review and Session Orientation

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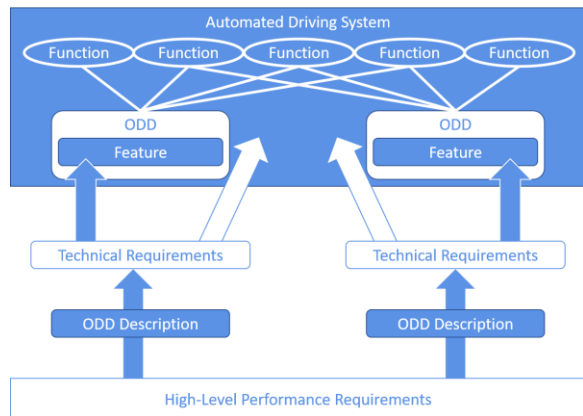
Web Conference

8 June 2021



# Adoption of the agenda

Agenda item	Documentation
1. Adoption of the agenda	12:45-12:55 FRAV-15-01/Rev.1
2. FRAV status and GRVA session report	12:55-13:10 FRAV-15-03
3. Status of FRAV workstreams 3.1. DDT-relevant general safety requirements 3.2. ADS user definitions 3.3. Other Road User properties	13:40-14:30 FRAV-15-06 (ADS users) FRAV-15-07 (ADS users) FRAV-15-08 (DDT safety) FRAV-15-09 (DDT safety) FRAV-15-10 (ORU properties) FRAV-15-11 (ORU properties)
4. Data collection for ADS vehicles	14:30-15:00 FRAV-15-12 (data collection)
5. FRAV status and next steps 5.1. Workstream tasks and deliverables 5.2. Next sessions: 6 July, [26-27 July] 5.3. Any other business	15:00-15:15



1. ADS drives safely
2. ADS interacts safety with user(s)
3. ADS responds safely to critical events/conditions
4. ADS safely manages damage/malfunction
5. ADS maintains safe operational state

Originally, 40 topics related to safety needs and goals for ADS performance across the five dimensions covered by the starting points

FRAV initially addressed the diversity of ADS applications and developed a framework to enable the application of safety requirements to any ADS configuration.

FRAV gathered input from across all stakeholders, including national and regional guidelines to develop a framework covering the full range of anticipated safety needs.

## Safety topics review

19 pages of comments on interpretation and elaboration of safety topics, covering 43 topics (FRAV-12-08). Multiple references to “DDT”, “ADS user(s)”, and “other road users” indicated need to reach common understanding. Comments included concept for “guardrails approach” to ADS driving requirements.

## Tasks/Objectives

Three workstreams:

1. Dynamic Driving Task
2. ADS users
3. Other road users

Three milestones:

1. Common understanding
2. Application to define safety needs
3. General requirements to address safety needs

## Common Understanding

**DDT:** FRAV-14-07/Rev.1

**ADS users:** Working on descriptions of user roles/responsibilities

**ORU:** Definition of common and special physical, functional, and/or behavioral properties based on ORU cases

**New task:** Apply DDT understanding to relevant safety topics with aim to propose safety requirements

## Safety Needs

Identify safety needs relevant to the diverse roles human users may have across ADS configurations and to ORU based on the common and special properties, based on elaboration of safety topics.

Consensus on approach(es) to addressing safe ADS performance of the DDT (nominal and safety-critical conditions) building from safety topics.

## General Requirements

## Specifications

## ADS descriptions

## Package Delivery

General safety requirements addressing safety needs based on starting points framework and elaboration of safety topics. “General safety requirements” means definition of what should be verified for what reasons. Specifications (e.g., criteria, limits, formulas) would follow.

(GRVA-11 September 2020)

FRAV has discussed several approaches to defining specifications, especially related to ADS performance of the DDT:

- Careful & Competent Human Driver
- State of the technologies
- Mathematical formulas (e.g., “safety envelopes”)
- Positive statistical risk balance

Specifications need to address traffic efficiency and safety (such as “string stability”) so combinations of methods are likely in finding optimal solutions.

Based on understanding of requirements, FRAV can return to its original framework to develop guidelines regarding documentation required to understand each ADS (e.g., configuration, intended uses, and limitations on use) and application of requirements.

Package consisting of guidelines for ADS documentation, safety requirements, and other guidance as needed to understand application of safety requirements to individual ADS applications.

(GRVA-12 February 2021)



Purpose of Data Collection	Applicability of Data	Data Set	General Description
Accident analysis/ reconstruction	All vehicles	A	Data on vehicle state/performance
	Conventional vehicles (no ADS)	B	Data on actuation of manual driver controls
	Vehicles equipped with an ADS	C1	ADS data on DDT performance
	Vehicles equipped with an ADS designed to interact with a user	C2	Data on user behavior/interactions with ADS
Evaluation of system operations/research/ assistance with accident analysis ( L3-L5)	Vehicles equipped with an ADS	D1	Non-crash ADS operational performance data
	Vehicles equipped with an ADS designed to interact with a user	D2	Non-crash user interactions with ADS

Elements in the data sets are mutually exclusive (i.e., no duplication) and may be combined depending upon the vehicle configuration, for example:

- Conventional (manual only) vehicle → A + B
- ADS with human driver controls → A + B + C1 + C2 + D1 + D2
- Driverless passenger vehicle → A + C1 + C2 + D1 + D2
- Driverless commercial vehicle (no occupants) → A + C1 + D1

- ✓ Agreed on description of Dynamic Driving Task
- ✓ Agreed on concept to based ORU safety on ORU common and special properties
- ✓ Agreed on concept for categorization of data collection
  - Task to reach consensus on essential “user definitions”
  - Task to apply DDT to general safety requirements
  - Task to identify common and special ORU properties
  - Task to apply data categorization concept to known data elements

- DDT-relevant safety requirement
  - Documents FRAV-15-08 and FRAV-15-09
- ADS user definitions
  - Documents FRAV-15-06 and FRAV-15-07
- ORU physical, functional, and behavioral properties
  - [Documents FRAV-15-10 and FRAV-15-11]
- Data collection input for EDR/DSSAD
  - [Document FRAV-15-12]



- Upcoming sessions
  - Session 16 (6 July): Initial general requirements
  - Session 17 (26-27 July): Consolidation/initial GRVA-11 preparation
  - Session 18 (9 September): 3<sup>rd</sup> review general requirements status
  - Session 19 (16 September): Review GRVA submission
- GRVA-11: 27 September-1 October
- Four months to prepare submission to GRVA-12 (February 2022)

**Are we on task? Any course corrections?**