

## Invitation to the 11<sup>th</sup> Session of the GRVA Informal Working Group on Functional Requirements for Automated Vehicles (FRAV)

The 11<sup>th</sup> session of the FRAV informal group is scheduled for 30 March 2021 between 13:30 and 16:00 CET via web conference.

### Session Objectives

The session is expected to cover the following items:

1. Consideration of input on the safety topics
2. ADS evolution and lifetime safety
3. Introduction to GRE discussions on AV signaling requirements
4. Introduction to SAE J3197: Automated Driving System data logger
5. Introduction to IEEE 2846: Assumptions for Models in Safety-Related AV Behavior Scope
6. Leadership proposal for next steps

### Submissions

Given the constraints imposed by the web conference format, the co-chairs wish to adhere to a fixed schedule with time limits for each agenda item. Documents may be submitted for consideration at any time; however, the co-chairs may need to postpone their presentation to a future session. All documents prepared for the session, including the session agenda, will be posted on the [FRAV-11 webpage](#) as available. Documents for the session should be submitted to the [FRAV secretary](#) by **25 March**.

### Additional context

#### *Input on safety topics*

FRAV welcomes any input experts may wish to provide towards deriving verifiable requirements from the current 40 safety topics isolated by the group.

#### *ADS evolution and lifetime safety*

FRAV will receive a presentation from France concerning the evolution of ADS configurations over the vehicle lifetime and its potential impact on safety requirements and evaluation process of ADS.

#### *AV signaling requirements*

During 2018-2019, a GRE task force on Automated Vehicle Signaling Requirements (AVSR) considered whether vehicles equipped with Automated Driving Systems should be required to provide external signaling to other road users and if so, what signaling should be required.

The AVSR task force concluded that a decision on whether external signaling should be required exceeded its mandate. Regarding the form of signaling, if required, the task force concluded that such a signal should be visible with specifications to define when and under which conditions this signal should be activated. The specifications should consider the level of driving automation and types of interactions such as with police or other road users. The task force did not exclude the possible need for audible signals to support interactions with visually impaired road users or other special needs.

#### *SAE J3197*

This recommended practice provides common data output formats and definitions for a variety of data elements that may be useful for analyzing the performance of an Automated Driving System (ADS) during an event that meets specified trigger-threshold criteria. The defined data elements are unique to Levels

3, 4, or 5 ADS features, as defined by SAE J3016, and provide additional background on the events leading up to a crash or crash-like event.

#### *IEEE 2846*

This standard describes a minimum set of reasonable assumptions used in foreseeable scenarios to be considered for road vehicles in the development of safety-related models that are part of Automated Driving Systems (ADS). The standard includes consideration of rules of the road and their regional and/or temporal dependencies. The Informative portion of the standard identifies attributes of suitable models including best practices for balancing ADS assumptions with rules of the road used in the context of the Dynamic Driving Task. The Informative portion also identifies methods that may be used to verify whether an implementation conforms to the minimum set of required reasonable assumptions used in foreseeable scenarios and defines an example model conformant with the standard.

#### *Leadership proposal for next steps*

The co-chairs wish to enable parallel work streams to facilitate progress in between FRAV sessions. Toward this end, the co-chairs would like to reach agreement on a small number of key questions derived from the safety topics that can be discussed during a follow-up session on 8 April. The purpose of these questions is to solicit input for the April session that can provide a basis for parallel efforts to prepare proposals for consideration during a session in May. In other words, the co-chairs would like FRAV to agree on questions on 30 March, consider responses on 8 April, and then ask for volunteers to pilot parallel efforts among interested experts to provide written proposals for the May session.

The suggested questions are:

- What functions make up the DDT?<sup>1</sup>
- What “user definitions” do we need to support user-interaction/HMI requirements?<sup>2</sup>
- With what categories of “other road users” would an ADS interact?<sup>3</sup>

In addition, the leadership of the informal working group on EDR/DSSAD indicated to GRVA and WP.29 during their recent sessions that the group would like to receive input from FRAV regarding DSSAD requirements for ADS.

- What does FRAV need from EDR/DSSAD regarding DSSAD requirements?<sup>4</sup>

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<sup>1</sup> DDT means the functions required to operate a vehicle in traffic; however, FRAV has not agreed on what these functions are. By definition, an ADS must integrate means to perform all the DDT functions. A DDT-related failure could be critical. The ADS assessment would need to verify that the ADS is capable of performing the entire DDT. Therefore, defining these functions is on the critical path for defining safety requirements.

<sup>2</sup> FRAV has noted that user-related requirements depend upon the user roles and responsibilities. FRAV has noted differences depending upon whether the user is in the vehicle with access to controls, a passenger without access to controls or in a vehicle without controls, an external user with a line of sight to the vehicle and access to the ADS, a user in a remote operations center, etc. Therefore, defining these users is on the critical path towards defining requirements for user-related safety.

<sup>3</sup> Interactions with other road users depends upon who or what the other road users are. FRAV has noted interactions with other drivers/vehicles, pedestrians, cyclists, animals, police and emergency vehicles, road work crews, etc. Therefore, understanding the categories of these “other road users” is on the critical path towards defining requirements for interactions with other road users, including communications and signaling.

<sup>4</sup> The EDR/DSSAD informal group is initiating discussions on technical specifications for DSSAD. Since FRAV presumably will require ADS vehicles to be equipped with DSSAD, EDR/DSSAD needs timely input from FRAV.