

Invitation to the 9th Session of the GRVA Informal Working Group on Functional Requirements for Automated Vehicles (FRAV)

The ninth session of the FRAV informal group is scheduled for 12 January 2021 between 12:30 and 15:00 CET via web conference.

Session Objectives

The session agenda will cover the following items:

1. Adoption of the agenda
2. Adoption of the reports of the previous sessions
3. FRAV status and consensus
4. ADS level of safety
 - 4.1. Guiding principle statement
 - 4.2. Research and supporting data needs
5. Elaboration of ADS safety requirements
 - 5.1. Input, if any, on the initial 40 discussion topics
 - 5.2. First consideration of ADS “drive safely” subtopics
6. Documents 4 and 5 updates
7. Highlights from the 8th GRVA session
 - 7.1. FRAV deliverables under the AV Framework Document
 - 7.2. Integration of FRAV and VMAD output
 - 7.3. Artificial intelligence
8. Next Steps and Deliverables

The main aims of this session:

- Check for consensus on the overall level of safety guiding principle
- Discuss initial safety topics to solicit views and questions
- Consider updates to Documents 4 and 5
- Discuss FRAV responses to GRVA requests

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; 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-09 webpage](#) as available. Documents should be submitted to the [FRAV secretary](#) by **6 January**.

Additional Background

Level of Safety

Based on the stakeholder input during the 8th session, Document 5 has been updated with the following statement regarding the overall level of safety desired from ADS deployment:

“ADS performance should be consistent with safe human driving behaviors while avoiding human recognition, decision, and performance errors and the introduction of unreasonable ADS-specific risks.”

FRAV will consider whether this statement adequately captures the overall aims of ADS safety requirements. FRAV will also consider input, if any, regarding research on human driver performance and behaviors, human factors in crash causation, and ADS capabilities to support decisions on safety requirements derived from this overall principle for ADS safety.

Elaboration of ADS safety requirements

FRAV presently has a list of 40 discussion topics (including points under the main topics) categorized under the five starting points. The points have been introduced into Document 5 (FRAV-08-05) for further consideration under section 5 (ADS Performance Requirements). FRAV will consider input, if any, on the list as a whole such as consideration of additional topics or subtopics not covered by the existing topics.

As agreed during the 8th session, FRAV will begin working through the topics, starting with the points raised under the “ADS should drive safely” starting point:

- The ADS should perform the entire Dynamic Driving Task.
 - The ADS should control the longitudinal and lateral motion of the vehicle.
 - The ADS should recognize the ODD conditions and boundaries of the ODD of its feature(s).
 - The ADS should detect, recognize, classify, and prepare to respond to objects and events in the traffic environment.
- The ADS should respect traffic rules.
- The ADS should interact safely with other road users.
- The ADS should adapt its behavior in line with safety risks.
- The ADS should adapt its behavior to the surrounding traffic conditions.
 - The ADS driving behavior should not disrupt the flow of traffic.
- The ADS behavior should not be the critical factor in the causation of a collision.

Nothing precludes the drafting of initial requirements; however, the minimum goal for the session is to gather input on issues raised by the topics. The aim of the discussion is to identify questions, subsidiary issues, benchmarks, data needs, and other elements that FRAV might address in defining measurable/verifiable requirements. The general intention is to review the topics in iterative phases. During the initial phase, the aim is to solicit comments and questions towards identifying possible safety requirements. Subsequently, FRAV would review this output towards defining statements with criteria, metrics, or key performance indicators. Ultimately, FRAV would further refine the outcomes with values, limits, or other verifiable/measurable parameters. Naturally, this work will be fluid and based upon outcomes of discussions over time. Nonetheless, the expectation is that FRAV will need to run through the topics and outcomes several times to progressively reach decisions on individual measurable/verifiable safety requirements.

Documents 4 and 5

Document 4 provides a running record of decisions taken during FRAV sessions. Document 5 provides an interim text to facilitate discussions, particularly on specific points that need clarification to enable the drafting of eventual proposals to GRVA and WP.29. The contents of Documents 4 and 5 remain continuously open to discussion and revision.

FRAV will consider any concerns raised by stakeholders regarding the text of FRAV-08-05. FRAV will receive a brief update on changes to Documents 4 and 5 as prepared for the 9th session (FRAV-09-04 and FRAV-09-05, respectively). Comments on FRAV-09-04 and FRAV-09-05 are welcome during the session, but FRAV (in the interests of time management) generally presents changes and asks stakeholders to provide written comments in between sessions to enable drafting of updates to the documents for the next session.

GRVA requests

During its 8th session (14-16 December), GRVA discussed informal working group deliverables under the WP.29 Automated Vehicle Framework Document. GRVA requested FRAV to provide its views on the outcomes that may be expected from its work to inform AC.2 decisions on deliverables. FRAV should discuss its intentions for future work, possible milestones, and feasible deliverables during 2021-2022. In particular, FRAV should consider its possible contributions to support the EU interest in establishing requirements for motorway (divided highway) ADS applications during 2021.

GRVA also discussed the integration of FRAV and VMAD output into a proposal for the New Assessment/Test Method for ADS. FRAV will consider points of interface between the two groups. FRAV stakeholders are requested to bring points of contact with VMAD activities to the attention of the group.

Lastly, GRVA discussed the broad topic of artificial intelligence and the use of AI in the development and design of ADS. FRAV should consider the relevance of AI to ADS and whether the uses of AI suggest a need for safety requirements to address possible risks in ADS deployed in production vehicles for public use.