

<b><u>Report of the third meeting of the Informal Working Group on Functional Requirements for Automated and Autonomous Vehicles (IWG FRAV)</u></b>	
Venue	Web conference
Date	28 July 2020
Documents	Submissions for the session can be found on the <a href="#">FRAV-03 UNECE wiki page</a> .
Status: <u>Adopted</u>	

<i>Agenda and previous session report adopted.</i>	FRAV adopted the draft agenda (FRAV-03-01). FRAV also adopted the draft report of the previous session (FRAV-02-02) without revision.
<i>VMAD anticipates a need for FRAV input by the end of September 2020.</i>	<p>FRAV invited the VMAD co-chairs to describe their group’s activities and expectations.</p> <p>VMAD has drafted a “Master Document” to consolidate input on ADS assessment methods and tools (similar to the aims of the FRAV Document 5). The current VMAD discussions seek agreement on generic elements of the New Assessment/Test Method (NATM), including why the elements are needed, what purposes they serve, and how they fit together. VMAD has also prepared a table for translating its Master Document into a work plan.</p> <p>The co-chairs noted a correlation between VMAD work on traffic scenarios and FRAV work on operational design domain (ODD) descriptions. The co-chairs stressed a need for FRAV and VMAD to share common terms and definitions.</p> <p>VMAD expects to work on development of the NATM pillars and concepts through to the September GRVA session. After that point, VMAD would like to consider application of the NATM to safety requirements and ODD elements developed by FRAV.</p>
<i>FRAV reviewed its progress under special procedures since late March 2020.</i>	<p>The co-chairs provided a slide deck to guide the discussions (FRAV-03-04).</p> <p>FRAV reviewed the activities undertaken since the cancellation of the April face-to-face session in Paris.</p> <p>FRAV adapted to the health and travel restrictions by instituting a round-robin approach to elaborating Document 5. This approach consisted of requesting comments on narrowly defined topics and circulating draft summaries of the input received with a draft proposal for Document 5. This latter process was then repeated until a final summary and proposal produced consensus acceptance. The process resulted in five addenda to Document 5 (FRAV-03-5-Add.1-5), documenting the decisions and open items for future consideration.</p>

<p><i>FRAV confirmed its high-level understanding of ODD descriptions and their use to define an ADS feature.</i></p>	<p>FRAV discussed the outcomes of the first four addenda to Document 5 which mainly concerned issues related to ODD. FRAV noted its high-level agreement on the following points:</p> <ul style="list-style-type: none"> <li>• An automated driving system (ADS) may have more than one ODD.</li> <li>• The term “feature” refers to an ODD-specific application of ADS hardware and software.</li> <li>• Manufacturers should be required to provide a description of the ODD of each feature made available to the user by an ADS.</li> <li>• Specifications for ODD descriptions should be developed.</li> <li>• ODD description specifications should be developed in line with safety requirements defined elsewhere in Document 5.</li> </ul> <p>FRAV noted the importance of the term “feature” to enable differentiation of ADS designs and uses across ODD, including during their assessment. FRAV further noted that ADS features can share some or all of the hardware and software integrated into an ADS. This view suggested the concept that an ADS can have functions that enable one or more features.</p>
<p><i>FRAV discussed open issues, especially external versus internal operational design constraints</i></p>	<p>FRAV reviewed open items from the ODD discussion (slide 5 of the co-chairs’ slide deck). The open items included whether ODD refers to any operational design elements or only to elements external to the vehicle, guidelines and taxonomy for ODD descriptions, mandatory description requirements, and the SAE definition of the dynamic driving task (DDT).</p> <p>FRAV agreed to consider these open items as the work progresses.</p>
<p><i>FRAV reached a tentative consensus (for confirmation at its next session) that ODD refers to external conditions. FRAV agreed that an ADS may have additional operational constraints.</i></p>	<p>FRAV discussed open issues documented in Addendum 4 to Document 5 (FRAV-03-05-Add.4).</p> <p>FRAV reiterated its recognition of the issues raised by China’s proposal concerning operational design conditions. FRAV acknowledged that ADS features may have operational design constraints related to internal vehicle functions, such as a prerequisite for use of seat belts prior to use of a feature. FRAV tentatively accepted a proposal to refine the definition of ODD to specify external operating conditions for confirmation at its next session.</p> <p>As a result, FRAV would consider the impact of possible design constraints outside this definition of ODD for integration into Document 5.</p>

<p><i>FRAV accepted the draft revisions to the ODD chapter of Document 5 subject to future refinement.</i></p>	<p>FRAV discussed the proposed text for revision of Document 5 pursuant to the ODD discussions. FRAV accepted the following interim working definitions pending further development of Document 5:</p> <ul style="list-style-type: none"> <li>• “Automated Driving System (ADS)” means the hardware and software that are collectively capable of operating a vehicle on a sustained basis.</li> <li>• “Operational Design Domain (ODD)” means the operating conditions under which an ADS feature is specifically designed to function.</li> <li>• “(ADS) feature” means an application of ADS hardware and software designed specifically for use within an ODD.</li> </ul> <p>The Netherlands raised a concern that the ODD definition refers to the ADS feature while the ADS feature definition refers to ODD. As a result, the Netherlands suggested finding language to remove the circular references.</p> <p>FRAV agreed that manufacturers should be required to provide ODD descriptions for the features available on an ADS. Pursuant to the discussion noted above, FRAV noted that it may be useful to broaden the “ODD chapter” of Document 5 to provide guidelines for manufacturer descriptions of the feature ODD and of other aspects of the ADS.</p> <p>FRAV agreed to consider refinements at its next session.</p>
<p><i>FRAV discussed “system safety” and confirmed that the term addresses functional and operational aspects ADS safety.</i></p>	<p>FRAV considered a revised starting proposal for discussions on the System Safety chapter of Document 5 (FRAV-03-05-Add.5).</p> <p>FRAV agreed during its 2nd session that “system safety” includes system design and general operational performance. This view was repeated in responses to the initial request for comments on the “System Safety” chapter (circulated on 8 June 2020) and confirmed during the 3rd session.</p> <p>During the consideration of ODD, Germany raised a question regarding “features”, “functions”, and definition of the terms and their use. FRAV set aside the question pending clarification of ADS, ODD, and feature definitions. However, the concept of “functions” arose again in the exchanges on the System Safety chapter.</p> <p>As noted above, ADS features can share ADS hardware and software. The FRAV Terms of Reference mandate development of “functional (performance) requirements” and “requirements for Functional Safety” (<i>sic</i>). This input suggests two sets of requirements, respectively concerning operational performance and system-level functional (or design) performance, including failure management.</p> <p>FRAV agreed to further consider how to capture the functional and operational aspects of ADS performance at its next session.</p>

<p><i>FRAV discussed a “triangular approach” for developing ODD description requirements, “functional requirements”, and “performance requirements”.</i></p>	<p>In an effort to visualize the concept of different categories of interdependent requirements, the Secretary presented a “triangular approach” to the development of specifications. The Secretary noted that the 2nd FRAV session (Tokyo, January 2020) had produced a list of 142 proposals for requirements (circulated within FRAV as document 200223 FPR Candidate List).</p> <p>The proposal suggested considering the candidate requirements in terms of their relevance to manufacturer descriptions of the ADS (ODD and other elements), functional requirements, and operational performance requirements. FRAV previously agreed during the ODD discussions that the ODD elements should be derived from performance requirements. Therefore, the proposal suggested a method for addressing all aspects of ADS safety by developing high-level performance requirements from which to derive underlying requirements for functional capabilities and identifying conditions that might impact ADS performance.</p> <p>The proposal generated further discussion on the meaning of “system safety”, “functional requirement”, and “performance requirement” (as well as an alternative analogy of a three-legged stool).</p> <p>Given the session time constraints, FRAV agreed to further consider approaches to developing requirements aligned with the assessment methods under development by VMAD.</p>
<p><i>The next FRAV session will be remotely before the GRVA September session.</i></p>	<p>The FRAV co-chairs outlined plans for further work, including to hold a web conference before the GRVA September session (scheduled for 21-25 September). The GRVA chair noted the likelihood that the GRVA would be held remotely as has been done for recent GRPE, GRSG, GRSP, and WP.29 sessions. (Secretary’s note: The co-chairs anticipate holding the FRAV session on 8 September between 13:00 and 16:00 CET.)</p>
<p><i>FRAV tasks in preparation for the next session.</i></p>	<p>FRAV requested the secretary to prepare materials to support the next session, including the session report and request for comments regarding the definition of ODD, system safety and related terms and the proposal for a “triangular method” or other approach that might enable FRAV to turn its attention to the list of 142 proposals for ADS requirements. (Secretary’s note: A draft request for comments has been distributed to the group as 200809 FRAV-04-05-Add.1.)</p>