



FRAV Status Report

Report to GRVA from the UN Informal Working Group on
Functional Requirements for Automated Vehicles

Sessions

- Preparatory session, 23 September 2019, Geneva
- FRAV-01, 9-10 October 2019, Berlin
- FRAV-02, 14-15 January 2020, Tokyo

FRAV currently includes 100 stakeholders from across the Contracting Parties, Industry, and other interested parties.

Progress Report

- FRAV has reviewed SR1 for gaps in addressing anticipated vehicle configurations enabled by automation.
- FRAV has reviewed the Contracting Party guidelines and policies.
- FRAV has agreed conceptually on the common safety elements.
- FRAV has gathered extensive stakeholder input on potential functional performance goals.
- FRAV has devised a documentation tool (“Document 5”) to structure and organize the stakeholder input for further development.

Considerations: Terminology

- SR1 refers to “drivers” and “seating positions” in vehicle definitions. Automated vehicles may not have drivers and could include small vehicles with standing passengers.
- “ODD” provides an accurate term for referring to operating conditions; use of “OD” should be discontinued.
- “Autonomous” is an inaccurate and misleading term; its use should be discontinued.

Considerations: Terminology

- “Accident” is an inaccurate and misleading term; it should be replaced with more objective and/or precise terms.
- “Reasonable” and “rationale” are not synonyms; “reasonable” is the accurate term established under product law and pairs with “unreasonable” as used across functional safety standards.
- “Minimal” not “minimum” risk maneuvers/conditions: best response under a given set of uncontrollable conditions.

Considerations: High-Level Guidance

FRAV is proceeding from high-level requirements towards more detailed requirements as may be justified to address specific safety needs.

- “Free of unreasonable safety risks” is an accepted and established concept and may be preferable to “non-tolerable risks” or other nonstandard terminology.
- Assurance of safe and fluid traffic flows should be a high-level priority to guide functional performance requirements.
- Collision avoidance goal suggests that “destruction of property” should be avoided where possible and consistent with avoiding injury or death.

Common Safety Elements (from an FRAV perspective)

- **Operational Design Domain**
 - Intended use conditions, including at the level of system features
 - Does not prejudice minimum requirements
- **System Safety**
 - Includes Object and Event Detection and Response (OEDR)
- **Object and Event Response Execution**
 - Specific focus on motion-control performance under normal and other conditions
 - Associated with third-party testing
- **Human-Machine Interface and Operator Information**
 - External and Internal
 - Misuse, abuse, and disuse mitigation
- **Safe Fallback Response**
 - Broader scope than “Failsafe response”

Other Considerations

- “Vehicle maintenance and inspection”
 - In-use performance (prevention of use in an unsafe state)
- “Consumer education and training”
 - Misuse prevention
- “Crashworthiness and compatibility”
 - GRSP responsibility
- “Post-crash AV behavior”
 - Safe state following a collision

Near-term FRAV Orientation

- FRAV-03, 14-15 April 2020, Paris (CCFA)
- FRAV-04, 8-9 September 2020, Santa Clara (NVIDIA)
- Elaborate Document 5 to establish work streams
- Consensus on initial descriptions of candidate functional performance requirements
- Elaboration of descriptions with explanations of safety needs and candidate performance criteria

FRAV Requests to GRVA

- GRVA consideration of input to WP.29
 - Terminology
 - High-level guidance (Safety Vision)
 - Common safety elements
 - Unallocated topics
- Comments or guidance on FRAV program