Status Report July meeting
Validation Methods for Automated Driving (VMAD)

GRVA, September 2019

Feedback from 178th WP.29

- Framework document on automated/autonomous vehicles approved

  (ECE/TRANS/WP29/2019/34/rev.1)

- ToR's for VMAD (and FRAV, EDR/DSSAD) approved

- Request to VMAD to evaluate new validation methods (including CEL) for ALKS before February 2020 GRVA session

Consideration of Framework document and ToR for VMAD

- Excerpt from framework document：

  "Design and validation methods should demonstrate the behavioral competencies an Automated/autonomous vehicle would be expected to perform during a normal operation, the performance during crash avoidance situations and the performance of fall back strategies. Test approaches may include a combination of simulation, test track and on road testing"

- A number of comments for clarification, possible discrepencies between ToR and Framework document and unclear differences in wording have been raised in the group

- These issues can and will be tackled in the future and should not hinder the progress of VMAD

Roadmap of VMAD Activities

- Evaluating new test and assessment methods, (including CEL) when applied to Automated Lane Keeping Systems of SAE levels 3/4 compatible with advanced technology such as that defined by the GRVA ACSF group.

    ➡ February 2020

- Deliver new assessment/test methods including requirements for CEL for automated driving to GRVA

    ➡February 2021

Note: Functional requirements for ALKS will be delivered by ACSF/FRAV.

Foundational work/discussion at VMAD to date

VMAD has come to the following broad agreements in order to demonstrate that the automated/autonomous vehicle (AV)is free of unreasonable safety risk;

➢ Traffic scenarios describing foreseeable situations AV may encounter should be developed.

➢ Multiple test methods ensuring coverage of foreseeable traffic scenarios, which may consist of audit, track testing, and real world testing should be developed.

Presentations on Traffic Scenarios

- Scenarios describe foreseeable situations ADS vehicles may encounter

  ➢ Japan/JASIC: presentation on 32 scenario patterns for highway use-case (passenger cars). Only 4 patterns would apply to ALKS. The targeted level of human driver must be determined;

  ➢ China: presentation on crash registrations for injuries and fatalities. This database may be used for validation of test scenarios

- Scenarios based on observed traffic behaviors and crash events

  ➢ China: presentation on Guidelines descibing 34 test scenarios for 14 validation test items (before road test)

Presentations on Multi-Pillar Approach

- Use of multiple test methods to ensure coverage of foreseeable scenarios and variables

  ➢ JRC: presentation on "pillars" for validation and general objective/content per pillar. Important to translate this to both 58 and 98 Agreement and discuss in-use data.

  ➢ OICA: presentation on multi-pillar approach. The minimum level of safety needs to be defined.

Towards the identification of Validation Methods for Automated Vehicles

- To speed-up activities, VMAD will be advancing its work through three subgroups that will complete assigned tasks:
  - Traffic scenario's
  - Audit/virtual testing/in-use data
  - Test track/real world testing

- Three questions to be answered (before 30 September):
  - description of the objective
  - relevant issues to be answered (answers to be followed up)
  - indication of relevant organizations for answering these issues

- Three subgroups will continue their activities between the VMAD meetings to maintain momentum and progress

Upcoming meetings

- October 16-17, in Ottawa
  - Consolidate subgroup input into VMAD framework
  - Feasibility: Application of framework to ALKS
  - Work assignments for subgroups to build VMAD and ALKS proposal
- January 14/15, 2020, JASIC in Tokyo
  - VMAD processes and ALKS proof-of-concept proposals for GRVA-5
- April 14-15, 2020, CCFA in Paris
- [September 8-9, 2020 NVIDIA in Santa Clara]

VMAD is very grateful to JRC for the excellent hosting of the meeting plus the interesting visit to their testing facilities