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 discrepancies 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 describing 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