

Comments added in **bold**,
based on Informal Document GRVA-02-14

Proposal for an Informal Working Group on Validation Method for Automated Driving (VMAD) (new group)

A) ~~Introduction~~ Terms of Reference

1. The development of technologies that perform driving tasks are advancing rapidly. Some countries developed guidelines for the introduction of automated driving systems including validation methods as one of these items. However, appropriate and harmonized methods to assess the driving performance of automated driving systems are lacking. These Terms of Reference (ToR) are the basis for the Informal Working Group "Validation Method for Automated Driving (VMAD).

Objective

2. **The informal group shall ~~To~~ develop draft proposals and test methods to assess the safety of the driving performance of automated driving systems and will assess including**
 - safe responses to the environment as well as
 - safe behaviour towards other road users**in relevant traffic scenarios.**

It is noted that validation methods developed shall be future-proof. **The validation methods should be developed for both the 1998 Agreement and the 1958 Agreement. The decision whether to adopt the work as regulation, guidelines or best practices will be taken by WP.29.**

Methodology

3. **Guided by GRVA activities and in particular in alignment with the work of the IWG on Functional Requirements**, the VMAD group will consider all possible operating environments for automated driving systems **(~~e.g., highway, interurban, urban, parking~~)**.

The VMAD group shall develop proposals for safety validation methods for automated and autonomous driving systems suitable for:

- highway traffic (phase 1),
- urban traffic and parking (phase 2) and
- interurban traffic (phase 3).

~~urban and highway traffic with interurban traffic potentially being dealt with in a second phase. However, if the workload of this approach is considered too great, the timescale too long or some issues are already taken care of in other working groups, the VMAD group will submit a revised plan.~~

4. The VMAD group will focus **initially** on passenger cars **and light goods vehicles, but shall extend their activity to** buses and trucks **at the earliest opportunity. ~~The defined in the Special Resolution No. 1 concerning the common definitions of vehicle categories, masses and dimensions (S.R. 1),~~ precision of the reference to vehicle types shall be determined from the Consolidated Resolution (R.E.3) and the Special Resolution No.1.**
5. The VMAD group anticipates consideration of the following elements: **among other things**
 - i. Methodology for assessing the vehicle in a controlled environment **test track),**
 - ii. Methodology for assessing the OEM's processes **(audit),**
 - iii. Simulation and virtual testing methodology **(simulation),**
 - iv. Methodology for assessing **and evaluating** the vehicle performance under real-world **driving** conditions **(real-world),**
 - v. **Methodology for assessing the electronic system compliance,**
 - vi. **Methodology for the development of digital identity.**
6. The VMAD group will take into account existing data, research outputs, relevant standards (e.g. ISO, SAE and JSAE), UN GTRs /UN Regulations/Resolutions, and those relevant documents from countries or regions (e.g. guidelines) in developing its proposals.

Suitable test methods will include

- **testing requirements / procedures,**
- **standardized and validated test- and validation tools, as well as**
- **assessment indicators and measures to be used as fail-pass-criteria.**

~~Working Criteria~~

7. **To the extent possible, the** proposed methods ~~will~~ **shall** be performance-oriented using objective criteria.
8. Where relevant, the VMAD group ~~may~~ **shall** take into account the following topics: ;
~~e.g.~~
 - [cooperative vehicle connectivity],
 - communication technology,
 - localization technology,
 - the use of methods for in-service conformity, and/or
 - methods which allow access to relevant vehicle data
9. ~~The decision whether to adopt the work as regulation, guidelines or best practices will be taken by WP.29.~~

10. ~~The VMAD group has authorization to work until December 2020.~~ Draft texts for the objectives of item 3 should be submitted to

- [autumn] session [2021] of GRVA for highway traffic (phase 1),
- [autumn] session [2022] of GRVA for urban traffic and parking (phase 2) and
- [autumn] session [2023] of GRVA for interurban traffic (phase 3).

Deliverables of the VMAD group shall be a catalogue of relevant and common traffic scenarios and the draft document(s) for the validation methods.

B) Rules of Procedure

1. The VMAD group is subsidiary to GRVA, and is open to all participants of WP29.
2. A summary report shall be provided to each session of GRVA.
3. The VMAD group will appoint ~~co-~~[chairs] and **secretary** ~~technical secretaries and may create further task forces to deal with the technical issues and proposals. In so doing it will agree chairs and secretarial resources among its membership.~~
4. The **official working** language of the VMAD group will be English.
5. All documents must be submitted to the secretary of the VMAD group in a suitable electronic format for publication on the dedicated website in advance of the meeting. The group may refuse to discuss any item or proposal which has not been circulated ten working days in advance.
6. An agenda and related documents will be circulated to all members of the VMAD group at least ten working days in advance of all scheduled meetings.
7. Decisions will be reached by consensus. When consensus cannot be reached, the [chairs] of the VMAD group shall present the different points of view to GRVA as required. The [chairs] may seek guidance from GRVA as appropriate.
8. The VMAD group will include the widest possible constituency of contracting parties and associated/affiliated bodies.