

## **A. Explanation on VMAD — questions and answers**

The text reproduced below was submitted by the co-chairs of VMAD. It is an update of Informal document VMAD-01-07 as a result of clarification of some phrases by the co-chairs.

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**Q1: Does VMAD replace AutoVeh?**

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**Answer to Q1:**

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No. With the restructuring of its subsidiary working parties, WP.29 directed that the roles and responsibilities for the technical aspects of the “AD” element of the ITS/AD Group including its former AutoVeh task force should be managed by the new GRVA. The coordination function of the former AutoVeh now rests with GRVA.

The purpose of VMAD is to deliver the objectives of the former AutoVeh SG. 1 and SG. 2.

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**Q2: What are the VMAD deliverables?**

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**Answer to Q2:**

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VMAD will develop methods to assess the safety of the driving performance for automated driving systems that assume the role of the human driver by undertaking driving tasks, including safe responses to the vehicle environment as well as safe behavior towards other road users.

VMAD anticipates delivery of these new assessment/test methods by December 2020.

In order to create deliverables, Terms of Reference have to be established that describe the intended outcomes. Separately, a more detailed work plan, including review points (milestones) have to be established, updated, and shared among VMAD IWG and GRVA members.

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**Q3: Should GRVA discuss if the 3-pillar approach is appropriate?**

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**Answer to Q3:**

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Yes. At its first session, GRVA requested the informal group to hold a full discussion regarding the 3-Pillar Approach. WP.29, at its 176th session, agreed in principle on identifying a “New Assessment/Test Method” using a multi-pillar concept as one of the priority topics for automated/connected vehicles. Under the multi-pillar concept, VMAD anticipates consideration of, among other things, the elements included in the 3-pillar approach proposed by OICA. VMAD will consult with, and report progress to, GRVA at its formal sessions.

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**Q4: Are there any duplications with other work items of GRVA especially transition demand, driver availability recognition, and information to driver?**

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**Answer to Q4:**

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No. Unless otherwise directed by GRVA, VMAD would not focus on functional requirements such as technical requirements for transition demands, driver availability recognition systems, or information to driver, but would address unexplored issues in view of the vehicle safety concept for the operational performance of Level 3 and above automated driving systems and vehicles equipped with such systems. VMAD would develop validation methods to assess the driving performance for automated driving systems that take control over driving tasks from the driver.

Informal Working Groups will be expected to report each session of GRVA to ensure that their work is understood and to avoid conflicts and/or redundancy across their collective efforts.

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**Q5: How will new validation methods be developed?**

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**Answer to Q5:**

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The new validation methods will be developed in view of the vehicle safety concept for the operational capabilities of Level 3 and above automated vehicles. The vehicle safety concept should first be discussed by GRVA and then by WP.29.

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For example, according to the guidelines of some contracting parties, vehicle safety concepts are stipulated in terms like "automated driving systems, within their operational design domain (ODD), shall not cause any traffic accidents resulting in fatalities and injuries that are rationally foreseeable and preventable".

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**Q6: Does the validation method replace conventional functional requirements?**

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**Answer to Q6:**

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No. The validation methods will be developed to complement conventional functional requirements and testing methods. The methods will complement the assessment of specific functional requirements that may be developed by GRVA or other subsidiary working groups of WP.29 such as those related to transition demand, driver availability recognition, information to driver, etc.

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**Q7: Are there still many challenges to simulation and virtual testing?**

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**Answer to Q7:**

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Yes. There are many challenges to simulation. Therefore, in addition to simulation, VMAD anticipates consideration of combination of the following elements among other things:

- i. Methodology for assessing the vehicle in a controlled environment,
- ii. Methodology for assessing the OEM's processes
- iii. Methodology for assessing the vehicle performance under real-world conditions.

In addition, VMAD 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.

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**Q8: Could it be possible to establish harmonized methods for on-road testing given that traffic conditions, including traffic rules, differ country by country?**

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**Answer to Q8:**

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CPs may benefit from sharing internationally harmonized standards, guidelines, or best practices even if traffic conditions are different.

The decision whether to adopt the work as regulation, guidelines or best practices will be taken by WP.29

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