Submitted by the experts of the
Informal Working Group on Automated Driving Systems

Proposal to amend ECE/TRANS/WP.29/GRVA/2026/2 (Proposal for a new United Nations Global Technical Regulation on Automated Driving Systems (ADS))

Proposal from the Informal Working Group on Automated Driving Systems to amend document ECE/TRANS/WP.29/GRVA/2026/2. Changes are marked in **bold** for new text and ~~strikethrough~~ for deleted text.

1. Table of Contents, Annex 6, remove brackets around "Data Storage Systems for Automated Driving".

2. Statement of Rationale, section C. Technical Background, subsection 4. Common Issues and Principles, paragraph 41, item (n), amend to read:

   (n)   Artificial Intelligence: vehicle automation is based on a combination of hardware and software. The requirements in this regulation are ~~based on the condition~~ **written with the expectation** that ~~this~~ **ADS** software does not include the use of online in-vehicle learning ~~Artificial Intelligence~~ **that self-modifies system behaviour beyond pre-defined boundaries**. Artificial Intelligence can be used to analyse and improve ADS software in an engineering environment. By means of a software update (over the air or connected) this update can be installed in the vehicle, again without in-vehicle learning features during operation of this version.

   Question: Is "beyond predefined boundaries" to be included?

3. Statement of Rationale, section D. Principles for developing the global technical regulation, paragraph 45, amend to read:

   45.   There are several GRVA subgroups active in the field of vehicle automation (EDR/DSSAD, TF AVC, TF FADS, CS/OTA). This first GTR is based on the information currently available from these subgroups. It provides worldwide harmonised procedures to set and verify compliance with minimum requirements for the safety of **vehicles with regard to their** ~~an~~ ADS, ~~and vehicles equipped with an ADS~~ with the notion that future improvements of the GTR are expected as ADS technologies continue to evolve. It takes into consideration existing and new data, research, and standards proposed by the contracting parties and industry.

4. Statement of Rationale, section G. Costs and Benefits, paragraphs 85. And 86., amend to read:

   85.   Empirical data from ADS demonstration zones and research institutions worldwide highlight the potential benefits and challenges of ADS technology across diverse traffic environments. Statistical analyses of passenger vehicles indicate that accident rates in ADS modes are consistently lower than in manual driving. ~~[According to the data shared by the GRVA experts, there is an average of 18.5 accidents per million kilometres in manual driving (10.2 at-fault accidents), compared to 7.1 accidents in automated driving (2.8 at-fault accidents). Notably, some leading technology providers have achieved zero at-fault accidents per million kilometres in automated mode.~~

   ~~86.   [However, according to the data shared by the GRVA experts, challenges to traffic efficiency persist, particularly during peak hours or in complex scenarios. Studies suggest automated vehicles may experience a 5-15 per cent reduction in average speed compared to human drivers, primarily due to conservative following distance~~

~~decisions, suboptimal route planning, and delayed responses to dynamic environments. For example, pilot projects in multiple urban areas reported peak-hour automated vehicle speeds of 22-28 km/h, 10-18 per cent lower than manual driving, with travel times increasing by 8-12 per cent on average.]~~

Renumber paragraphs 87 and 88 accordingly.

5. Delete footnote 34 under paragraph 2.17. *"User-initiated deactivation of the ADS"* and renumber subsequent footnotes accordingly.

6. Paragraph 2.11. *"Data Storage System for Automated Driving"*, remove brackets and amend to read:

   2.11. *"Data Storage System for Automated Driving (DSSAD)"* **means the capability to record and store data concerning the safety performance of a vehicle's ADS.**

7. Delete paragraph 2.31. *"Edge case"* and renumber subsequent paragraphs accordingly.

8. Paragraphs 4.1.4.4.1. and 4.1.4.4.2., amend to read:

   4.1.4.4.1. **The procedure for** remote termination **of** an ADS performing the DDT shall ~~be capable of triggering~~ **include the capability to perform** an ADS fallback response.

   4.1.4.4.2. **The** remote termination of an ADS or ADS feature(s) shall render it unable to be activated by a user until such time as the remote termination is rescinded.

   Question: Is "by a user" to be included?

9. Paragraph 4.2.2.3.10., amend to read:

   4.2.2.3.10. At the completion of the deactivation procedure, control shall be returned to the driver without any ~~continuous~~ **sustained** lateral or longitudinal control assistance active. **However, any sustained lateral assistance system that is permitted or required to be automatically enabled at the initiation of the power train may be set to the same state as it was prior to ADS activation.**

10. Paragraph 4.3.6., amend to read:

    4.3.6. The ADS shall receive and appropriately manage all signals received from other ~~vehicle~~ systems **of the ADS vehicle**. A list of these signals and how they are managed shall be included in the manufacturer's safety case.

11. Paragraph 5.1.8.5.3., amend to read:

    5.1.8.5.3. The data retention strategy shall ensure that:

    (a) Data related to a detected safety issue is retained until any necessary corrective action and review processes are complete, and
    (b) ~~The retention of the data for longer-term trend analysis (i.e., subset of the collected data)~~**A subset of the collected data is retained to enable longer-term trend analysis**.

12. Paragraph 5.2.1.3.1., amend to read:

    5.2.1.3.1. The manufacturer shall manage the **relevant** data used to verify, validate, and update the simulation toolchain(s) ~~throughout its lifecycle~~ **until the ADS has**

been decommissioned. The manufacturer shall consider the completeness, accuracy and consistency of this data.

13. Paragraph 5.2.1.13.2., delete explanatory remark:

   5.2.1.13.2. The manufacturer shall demonstrate that robust calibration procedures have been adopted for assigning appropriate value(s) to all the simulation parameters while ensuring that special attention is taken for the most critical parameters. ~~This is to ensure that the simulation toolchain can be used to emulate the relevant real-world system.~~

14. Paragraph 5.3.1.3., amend item (a) to read:

   (a) ~~Intended area of operation (e.g., jurisdictions, g~~ **G**eographic limitations~~)~~,

15. Paragraph 5.3.1.4.1.4., delete:

   ~~5.3.1.4.4. [The table specified in paragraph 5.3.1.4.1.2. of this Regulation shall be kept up to date with software and hardware updates.]~~

16. Paragraph 5.3.1.13.2., remove brackets:

   [5.3.1.13.2. The manufacturer shall justify the use of data elements provided by an alternative format listed in Annex 6.]

17. Paragraph 5.3.1.15., amend to read:

   5.3.1.15. The **system description** ~~safety concept~~ shall include the following information:

18. Paragraph 5.3.2.10., amend to read:

   5.3.2.10. The safety **concept** ~~case~~ shall include a list of safety risks to passengers (e.g., safety belts not fastened, passengers not seated) and a description of how they are managed for all passengers while an ADS feature is active.

19. Paragraph 5.3.2.16., amend to read:

   5.3.2.16. The safety **concept** ~~case~~ shall describe the manufacturer's basis for its determination that it has in place the necessary processes, resources, and competent personnel to:
   …
   (d) **Ensure that the** test routes ~~shall also~~ enable verification of nominal requirements for the safety of user interactions, including prior to, at the time of, and after entering and exiting the ODD of an ADS feature,
   (e) ~~To assess~~ **Assess** the behavioural competencies demonstrated by the ADS for each scenario against the DDT performance requirements under paragraph 4.1. of this Regulation, and
   (f) ~~To assess~~ **Assess** the capability of the ADS to ensure the safety of users and the safe use of the ADS.

20. Paragraph 6.3.1.1., replace text in brackets:

   6.3.1.1. ~~[The safety case shall be assessed by an assessor, or team of assessors meeting 6.3.1.6. and 6.3.1.7. in order to determine if the safety case is complete and robust.]~~**An assessment shall be conducted by competent personnel to verify**

the completeness and robustness of the safety case in accordance with the provisions of paragraphs 6.3.1.3. and 6.3.1.4.

21. Paragraph 6.3.1.3., amend item (g) to read:

> (g) **Unique labelling of claims, arguments and evidence in accordance with paragraph 5.3.3.1.2., and** backward and forward traceability from requirements to evidence in accordance with paragraph 5.3.3.3.

22. Paragraph 6.3.2.2.1., amend to read and correct the footnote:

> 6.3.2.2.1. The approval authority or its designated technical service shall verify that the manufacturer has used suitable and documented processes to derive behavioural competencies **and scenarios** that are relevant to both the ODD and to the ADS safety case.[40]
>
> [40] The methodology in the Annex 5[X] is one suitable process against which to review the process adopted by the manufacturer.

Annex 2, Section "OCCURRENCE DETAILS", rows 3 and 4, remove brackets:

Maximum ADS-determined/estimated vehicle speed [10] **during the 10** seconds prior to the collision
Maximum ADS vehicle longitudinal deceleration [10] **during the 10** seconds after the collision

Annex 5 ODD-based Behavioural Competencies and Scenario Identification Approach:

1. Section 1. Introduction, 2nd paragraph, delete "and situations" and remove brackets:

> The suggested approach includes a description of how such competencies can be classified into nominal, critical and failure and mapped to the relevant [scenarios and situations], selected either from existing databases or identified through the application of different approaches.

2. Section 1.2. Behavioural competencies

Delete 2nd paragraph:

[Nominal driving situations are those in which behaviour of other road users and the operating conditions of the given ODD are reasonably foreseeable (e.g., other traffic participants operating in line with traffic regulations) and no failures occur that are relevant to the ADS's performance of the DDT.]

3rd paragraph, amend to read:

[Critical driving situations are those **requiring a prompt action of the ADS to avoid or mitigate the risk of a collision, that could result in adverse consequences on human health or property damage. For example, those** in which the behaviour of one or more road users (e.g., violating traffic regulations) and/or a sudden and not reasonably foreseeable change of the operating conditions of the given ODD (e.g., sudden storm, damaged road infrastructure) **requires the ADS to take prompt action**. creates a situation that requires a prompt action of the ADS to avoid or mitigate a collision. In this case, it is recognised that the ADS may not be able to avoid a collision, but mitigation may be possible.]

4th paragraph, amend to read and remove brackets:

[Failure situations involve those in which the ADS or another vehicle system experiences a ~~fault or~~ failure that compromises the ADS's ability to perform the DDT, such as sensor or computer failure or a failed propulsion system.]

5th paragraph, amend to read:

[Nominal ~~driving~~ situations are those **that are neither critical nor failure, such as those** in which **the** behaviour of other road users and the operating conditions of the given ODD are reasonably foreseeable (e.g., other traffic participants operating in line with traffic regulations) and no failures occur that are relevant to the ADS's performance of the DDT.]

3. Section 2.1.1. ODD analysis, first paragraph, amend to read:

This analysis represents the first step with the aim to identify the characteristics of the ODD. An ODD [~~specification/~~description] can consist of stationary physical elements (e.g., physical infrastructure), environmental conditions, dynamic elements (e.g., reasonably expected traffic level and composition, vulnerable road users) and operational constraints to the specific ADS application. **The output consists of a list of elements to be considered in the subsequent analysis.** [~~Various sources provide useful guidance for precisely determining the elements of a particular ODD and their format definition....~~]

4. Section 2.2. Scenario Identification:

2nd paragraph, delete brackets and "and situations":

To ensure that the behavioural competencies identified in the previous paragraphs are ready to be assessed, ODD-relevant [scenarios ~~and situations~~] must be identified.

6th paragraph, item (e), amend to read:

(e) [~~ISMR ref~~] **In-Service Monitoring and Reporting findings.**

8th and 9th paragraphs, amend to read:

[While many of the knowledge-based methods are looking at existing data and knowledge, a different method is goal-based. ~~As the acceptance criteria are defined, they are actually setting the goals that should be demonstrated by testing and coverage and used as evidence for safety claims. Starting from these goals, and looking at the existing status of the evidence, gaps in testing and coverage can be identified, and mapped back to missing scenarios that should be used for testing.~~

~~Furthermore, existing scenarios already defined in standards, regulations or guidelines can also be utilised for the testing of ADSs. Additional scenarios include those that occur during real-world trials and deployments. Such scenarios might not have been considered pre-deployment but are key learnings. At the time of publishing this text, there is significant experience gathered with existing trials and tests, and thus a significant amount of driving logs and recording can be used.~~

10th paragraph, amend to read:

For ~~AI-centric~~ **modern** ADS systems, training requires usage of a lot of data from driving logs and recordings. The same data resources can be used to test the behavioural competencies. The challenge is to map these into the scenario categories, in order to ensure that this testing and its results are counted correctly toward the acceptance criteria evaluation.

12th paragraph, remove brackets and add last sentence:

The scenario-generation method should include adequate coverage of relevant nominal, failure, and critical [scenarios and situations] to effectively validate the ADS. "Coverage" refers to the degree to which scenarios sufficiently incorporate driving situations in order to validate the relevant requirements of this regulation. Sufficient coverage is essential to the overall effectiveness and credibility of these methodologies as a validation approach. Sufficient coverage should be with respect to the ADS feature or ODD. Coverage can be measured across different domains, and metrics can be used to determine sufficiency. **Coverage can be measured both on the test scenarios saving as input to the test, as well as on the behavioural competencies and KPIs demonstrated during testing.**

5. Section 2.3.1. Nominal Situations Competencies:

2nd paragraph, amend to read:

Therefore, an **example** approach to codify rules of the road to provide additional specificity ~~was developed (see Appendix 1)~~ **is introduced in paragraph 2.5.2. below**. Additionally, application of models involving safe driving behaviour may be needed in addition to reference to codified rules of the road in developing behavioural competencies for nominal driving situations.

6. Section 2.3.2. Critical Situations Competencies:

2nd paragraph, amend to read:

Analysis of the first type may be based on a variety of methodologies, including ~~e.g. IEEE 2846 (which offers~~ **existing standards that offer** guidance on what behaviours by other road users are reasonably foreseeable~~)~~ and other models of reasonable driving behaviour. Analysis of the second factor may be based on various models of acceptable human driving behaviour in crash imminent situations.

3rd paragraph, amend to read:

Hazard identification methods **(e.g., Systems Theoretic Process Analysis)** ~~(e.g. STPA as mentioned in SAE J3187) which~~ **that** analyse the system design for functional and operational insufficiencies can help identify the occurrence of emergent behaviour which may lead to critical situations.

6th paragraph, remove brackets:

[Critical situation behavioural competencies should provide evidence that an ADS needs to be responsive to actions by other road users, which may make a crash unavoidable. Therefore, critical scenarios should not be limited to those that are deemed preventable by the ADS. Unsafe behaviours of other road users (e.g., vehicle travelling in the wrong direction, sudden unsignalled lane changes, and exceeding the speed limit) — if reasonably foreseeable within the appropriate ODD — should be included as part of validation testing.]

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Informal Document GRVA-24-[]
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7. Section 2.4. Assumptions, first paragraph, delete reference:

Concrete performance requirements depend on the specific situations the ADS encounters, on a reference behaviour that is deemed appropriate for a human driver or a technical system, and on assumptions (e.g., cut-in speed values, reaction times, …) about the behaviour of the vehicle and other road users. Assumptions concerning the actions of other road users may need to account for cultural differences in driving styles in different geolocations, making it impracticable to harmonise these assumptions across different domains. Therefore, evidence should be provided to support the assumptions made. Existing standards, ~~e.g., IEEE 2846-2022~~ provide ~~a set~~ **sets** of assumptions to be considered by ADS safety-related models for an initial set of driving situations. Additionally, several other tools, including data collection campaigns performed during the development phase, real-world accident analysis and realistic driving behaviour evaluations, constraint randomisation, Bayesian optimisation, among others, can be used to inform values for such assumptions.

8. Section 2.5.1. Evaluation of target evidence and residual risk, add new paragraph:

… the ODD and scenario coverage, until the goals of the acceptance criteria is met.

Another way to look at it is represented by the goal-based methods. As the acceptance criteria are defined, they are actually setting the goals that should be demonstrated by testing and coverage and used as evidence for safety claims. Starting from these goals, and looking at the existing status of the evidence, gaps in testing and coverage can be identified, and mapped back to missing scenarios that should be used for testing.

9. Section 2.5.2. Application of Rules of Road, delete 2nd paragraph:

~~It is challenging to test against this requirement in the absence of codified rules of the road.~~

Annex 6, Data Storage Systems for Automated Driving

Paragraph 1.1., amend to read:

1.1. ~~This annex defines Data Storage System for Automated Driving (DSSAD) as the data storage capability of a vehicle to monitor the safety performance of ADS and establishes requirements to enable the evaluation of ADS safety performance.~~ **This annex provides DSSAD specifications in accordance with paragraphs 6.3.1.1., 7.3.1.13., 8.3.1.6., and 8.3.3.1. The manufacturer shall address these specifications in its description of the DSSAD installed on the ADS in accordance with paragraph 7.3.1.13.**

Paragraph 2.3., amend to read:

2.3. ~~In the case of the data intended to be stored off-board the vehicle cannot be transmitted, it shall remain stored on the vehicle.~~ **Data elements under paragraph 5 of this annex that may be stored off-board the vehicle shall remain stored on the vehicle until the data has been successfully uploaded to an off-board storage facility.**

Paragraph 3.1., remove brackets:

3.1. Each data element listed in paragraph 5 of this annex shall be available in accordance with paragraph 4 of this annex. The output shall be provided in an open standard format (e.g. JSON, CSV, XML), with the exception of 'sensor data', and the data shall be in a readable form, aside from 'sensor data' [and 'visual images'].

Paragraph 4, insert a new paragraph 4.1. and renumber subsequent paragraphs accordingly:

4.1. **The stored data defined in paragraph 5 of this annex shall be readily accessible to the approval authority and authorised entities for DSSAD data collected by the vehicles in their territory of deployment. The authorised entities and the conditions of access shall be defined by the applicable laws of the territory of deployment.**

Question: Was this text intentionally submitted and/or approved by EDR/DSSAD IWG or should the text be omitted or in brackets pending the February EDR/DSSAD session?

Paragraph 5.2.1., delete "and recording conditions":

5.2.1. The following table details the data elements of time-stamp data to be recorded, along with any additional information ~~and recording conditions~~.

Table of time-stamped data elements:

Delete column 3 and insert new row 3:

Event	*Additional Information*
Activation of the feature	ADS feature is activated by the: (a) system, or (b) user
The following data elements shall be recorded if they occur while an ADS feature is active.	
….	

Row 4, column 2, amend to read:

Deactivation of the feature	ADS feature is deactivated by the: (a) ~~system, or~~ **Initiated by the system**, or (b) ~~user~~ **Initiated by a user**.

Row 5, column 2, amend to read:

Start of ADS fallback to user, if applicable	~~Deactivation of the ADS feature initiated due to:~~ **ADS fallback to user initiated due to:**

Row 6, column 2, amend to read:

Start of ADS fallback to an MRC	~~MRC resulting from:~~ **Fallback to an MRC initiated due to:**

Row 16, columns 1 and 2, amend to read:

Detected failure ~~situation~~ **that compromises the ADS capability to perform the DDT**	~~The failure could include the following:~~ ~~(a) ADS~~ ~~(b) Sensor~~ ~~(c) Other vehicle systems (mechanical, electrical, etc.)~~ **Nature of failure in accordance with para. 7.3.1.15.**

Paragraph 5.3.1., remove brackets.

5.3.1.   {The data elements shall be recorded in compliance with paragraph 5.3.x if the following thresholds are reached or conditions occur:

(a)   Detected collision

(b)   EDR trigger input (excluding last stop trigger)}

Table of time-series data elements:

Insert new row 1:

Visual images[4]		

Insert new footnote 4:

[4] **This data element is generally represented by a camera image; however, this image may be a construct of other sensor data if camera images are unavailable.**

Amend footnote 5 to read:

[5] e.g., camera, radar, LiDAR, used by the ADS for decision making. This shall be documented in the information package provided to the Authorised Entity. This shall include a "Visual Representation" submitted to the Authorised Entity at the time of providing the DSSAD Data ~~and shall comply with the requirements of 4.1 and 5.4~~.

Justifications

This document proposes amendments to GRVA/2026/2 to remove brackets and resolve items that were pending at time of the formal document submission. These amendments have been agreed by the ADS informal working group, the GRVA ADS workshops, and the EDR/DSSAD informal working group. The amendments, including their rationale, can be found in the following ADS IWG documents:

1. ADS-17-22	10. ADS-17-04/Rev.1	19. ADS-17-12/Rev.1
2. ADS-17-14/Rev.2	11. ADS-17-12/Rev.1	20. ADS-17-03/Rev.1
3. ADS-17-06/Rev.3	12. ADS-17-08/Rev.2	21. ADS-17-28
4. ADS-17-20/Rev.1	13. ADS-17-12/Rev.1	22. ADS-17-12/Rev.1
5. ADS-17-12/Rev.1	14. ADS-17-17/Rev.1	Annex 2 ADS-17-21/Rev.1
6. ADS-17-23	15. ADS-17-12/Rev.1	Annex 5 ADS-17-13
7. ADS-17-12/Rev.1	16. ADS-17-23	Annex 6 ADS-17-23
8. ADS-17-27/Rev.3	17. ADS-17-12/Rev.1	
9. ADS-17-29/Rev.1	18. ADS-17-12/Rev.1	