

Proposal for Interpretation / Guidance document for UN Global Technical Regulation No. [XXX] and UN Regulation No. [YYY] on Automated Driving Systems

I. Drafting notes for this document

1. The document is drafted following the structure of the interpretation documents for the implementation of UN Regulations Nos. 155 and 156 (See document ECE/TRANS/WP.29/2023/45 for example).
2. There are distinct sections for interpretation and guidance.
 - a. The skeleton of interpretation document follows a typical structure for a specific paragraph as stated below -

Paragraph XX (GTR) / XX(UNR)

<"Clause Statement">

Explanation of the requirement

<Explanation Text>

Examples of documents/evidence that could be provided

<Example Text>
 - b. While skeleton of guidance document does not have specific structure.
3. This is a unified document referencing both UN GTRs and UN Regulations. Clause numbers, chronology is provisional and will be finalized upon submission to GRVA.
4. Angular brackets < > denote placeholders for template items to be populated later, while square brackets [] indicate content under development, such as clause numbers or regulation references.
5. Initial inputs from OPI (Officer of Principle Interest) representatives (such as items identified for interpretation or guidance, explanation requests etc) are highlighted in **turquoise**. These reflect pilot / preliminary thoughts. The actual draft content (in the form of text proposal) as proposed by OPIs and participants will be highlighted in **yellow** and finalised text will be highlighted to **green** subject to consensus during formal sessions.
6. The priorities defined by OPIs are being shown in document as 'Pr.High / Pr.Medium / Pr.Low / Pr. Undefined'. The items under each section are arranged in order High, Medium, Low.
7. The document will be version-controlled by the secretariat, with traceability to all proposed text amendments and incorporations.

2. Proposal

1. Preamble

1.1. The purpose of this document is to facilitate the interpretation of the requirements within UN Global Technical Regulation No. [XXX] and UN Regulation No. [YYY] on Automated Driving Systems when applying them to a particular ADS vehicle, to provide guidance on what may be used to evidence those requirements, and to help harmonise application across different manufacturers, authorities and inspection bodies.

2. Abstract

2.1. [In 2026, the UNECE WP29 adopted two worldwide legislations concerning the self-certification and the type-approval of the Automated Driving Systems of Automated Vehicles, opening the road to their introduction to the worldwide market. This regulation allows new generation of vehicles to be placed on the market with a complete and unambiguous legislative framework.

2.2. To define the conditions the self-certification and the type-approval of driverless vehicles, ADS IWG and ADS Workshop under the umbrella of the GRVA, have introduced a series of innovative elements that both industry and the Competent Authorities of the Contracting Parties have the task to operationalise.

2.3. The ADS workshop launched in 2025 the process of drafting an interpretation of some among the most innovative aspects of the ADS Regulations. The present document is the first interpretation document, which includes some guidance and interpretation material concerning the most relevant sections of the ADS regulations(s).

2.4. It has been drafted with the active contribution by the experts who compose the ADS IWG and ADS Workshop under the umbrella of the GRVA.

2.5. In its final form, the document is composed by two parts. A first part of technical interpretation of the regulatory text and a second part composed by two appendixes providing examples and relevant resources to support the operationalization of different aspects of the legislation(s).

Deleted: [The purpose of this document is to help clarify the requirements within UN Global Technical Regulation No. [XXX] and UN Regulation No. [YYY] on Automated Driving Systems and provide information on what may be used to evidence those requirements.]
[The target audience for this document are vehicle manufacturers submitting systems for test and the Technical Services / Approval Authorities assessing those systems. The outcome should be that this document is able to help harmonise evaluations between different Technical Services/ Approval Authorities.]

Commented [Sec1]: Reference GRVA-WS09-04

3. Acknowledgements

3.1. [The report is the result of the discussions and contributions by the experts who compose the ADS IWG and ADS Workshop under the umbrella of the GRVA. These activities relied on the previous FRAV and VMAD IWG which developed guidance for the definition of the requirements and the validation method of ADS.]

Commented [Sec2]: Reference GRVA-WS09-04

4. Introduction

4.1. [The present document provides information to support the interpretation and guidance on the requirements established in the GTR and UN Regulations on ADS on laying down rules for the self-certification of the Automated Driving System (ADS) of automated vehicles ("Regulation(s)" hereinafter). The document also provides information and guidance on possibilities to comply with those requirements, and how to provide evidence of such compliance.

4.2. The target audience are manufacturers aiming at a self-certification of an ADS or submitting systems for type-approval, other organizations involved in the ADS lifecycle, and the Competent Authorities/Technical Services (TS) / Type Approval Authorities (TAAs)

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assessing those systems. The purpose is to facilitate a harmonized interpretation and implementation of the Regulation(s).

4.3. The document strictly provides information to support the interpretation and guidance on the Regulation(s); it does in no form introduce new requirements. Whenever conflicting, the contents of the Regulation(s) are legally binding.]

Commented [Sec3]: Reference GRVA-WS09-04

5. Note regarding evidencing the requirements

5.1. [This document is intended to provide support for the interpretation of the Regulation(s) and provides indications on what may constitute “acceptable means of compliance” (AMC) for the Competent Authorities/Technical Services (TS) / Type Approval Authorities (TAAs) and on the information that manufacturers and other organizations involved in the ADS lifecycle should supply. It provides information only, it is applicable on a voluntary basis, and it is not intended to be exhaustive, i.e., means of compliance other than those illustrated here may be acceptable. The document cannot create additional obligations; moreover, it provides material to assist in understanding what information may be useful in demonstrating compliance and to contribute to uniform implementation. The AMCs are developed with the presumption of compliance with the rules, so that it is recognised that conforming to these AMCs is one acceptable way of complying with the relevant section of the Regulation(s).

5.2. The standards referenced in the present document that are not referenced in the Regulation(s) are intended as examples only and do not constitute binding requirements at any level. The same holds for the text included in the appendixes to the present document. They can be helpful in implementing the requirements of the Regulation(s) but their use is not mandatory. Depending on the ADS features defined by the manufacturer, and the practices and procedures they use, alternative and/or equivalent concepts may be used, and information may be supplied to comply with the requirements established in the Regulation(s).

5.3. Alternative and/or equivalent methodologies used to comply with the requirements established in the Regulation(s), as well as refinements or nuances of the methodologies after the implementation, can be introduced as future amendments to update the present document with aim at contributing to uniform implementation of the Regulation(s)

5.4. The section 6 of this document provides interpretation of some aspects of the Regulation(s), while section 7 of this document provides guidance on acceptable means to comply with requirements, examples and references for the most innovative part of the Regulation(s) have been provided in the appendixes.]

Commented [Sec4]: Reference GRVA-WS09-04

6. Interpretation on the requirements of the UN Global Technical Regulation No. [XXX] and UN Regulation No. [YYY]

Note. The paragraphs referred to below refer to the paragraphs of the on uniform provisions concerning the approval of vehicles with regards to UN Global Technical Regulation No. [XXX] and UN Regulation No. [YYY]

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A. Section [3 (UNR)] – Application for Approval

1. Paragraph 3.1 & 3.1.1 (UNR)

Pr.-Undefined

3.1 Prior to application for approval, and as early as reasonably practicable, the manufacturer or their duly accredited representative shall provide the following information to the approval authorities of all of the Contracting Parties in whose territory features of the ADS can be active ('receiving approval authorities').

- (a) A single point of contact for the receiving approval authorities to request information from the manufacturer,
- (b) The expected granting approval authority and the designated technical service being used by the manufacturer, if already selected, and
- (c) Brief details of the ADS, its feature(s) and ODD; this information shall be treated as confidential by the receiving approval authority.

3.1.1. In the case that the territory of an additional Contracting Party is added as part of an application for extension of a type approval, the requirements of paragraph 3.1 shall apply mutatis mutandis with respect to that Contracting Party and its approval authority Approval Authority.

Explanation of the requirement

These provisions introduce a requirement for manufacturers to contact the authorities in the countries where the ADS can operate in advance of formally applying for an approval. This step falls before the normal formal process of 'application for approval', which begins with the submission of the application to the granting Approval Authority. The intention of this notification is to make the receiving authorities aware that an automated vehicle is destined for their territory so that any necessary information can be exchanged with the manufacturer as early as possible. Information that could be provided in return might include:

- Specific national processes that need to be followed for deploying automated vehicles
- Any national guidance which is available on driving behaviours, unreasonable risk, 'competent and careful' standard, and traffic rules
- Information on national authorities that oversee automated driving, for example for the purpose of data reporting

The information provided by the manufacturer is expected to be brief, but giving enough information to understand the kind of vehicle, the type(s) of ADS feature, and any geographical or other significant aspects of the ODD.

'As early as reasonably practicable' means at the point the manufacturer has the information available and is confident that the information is mature and that the ADS vehicle is destined for the given country.

This process is not intended to open significant dialogue between the manufacturer and the Approval Authority of every destination country. The intent is to establish the relevant communication channels for exchange of information that will facilitate later processes, in particular the review activity prescribed in Paragraph 4.5.

2. Paragraph 3.1 & 3.1.1 (UNR)

Pr.-Undefined

In the case of ADS with features that can be active in the territory of Contracting Parties other than the Contracting Party issuing the approval, the manufacturer shall provide to the granting approval authority the following information for each territory:

- (a) Summary of how freedom from unreasonable risk has been defined, including details of specificities for the respective territory (if any),

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- (b) Summary of how the safety level of a competent and careful human driver has been determined, including details of specificities for the respective territory (if any),
- (c) Summary of how applicable traffic rules have been identified, interpreted, and assessed,
- (d) Summary of specific testing carried out regarding the territory,
- (e) A single point of contact for the receiving approval authorities to request information from the manufacturer, and
- (f) Details of the authorities identified for fulfilling the obligation to provide post-deployment notifications and reports to the 'relevant authority'.

Explanation of the requirement

The intention of this provision is to ensure that the manufacturer provides the granting approval authority with the necessary information for them to transmit to the receiving approval authorities during the process described in paragraph 4.5. The information provided should have sufficient detail to enable the receiving authority to make a meaningful assessment that the application and interpretation of the regulation are appropriate for deployment in their territory. Further guidance on the kind of information expected for some of the required items is given below.

(a) 'Freedom from unreasonable risk' is one of two top-level provisions in the ADS regulation which sets the expectation for ADS safety (alongside the comparison with competent and careful human driving). In order to certify freedom from unreasonable risk, it is necessary for the manufacturer to have determined what constitutes an acceptable risk, and this level of reasonableness may have national specificities.

The concept of freedom from unreasonable risk is closely aligned with that of 'absence of unreasonable risk' defined in international standards including ISO21448 and ISO26262 as:

"Risk judged to be unacceptable in a certain context according to valid societal moral concepts."

Where national authorities have published guidance on acceptable / unacceptable risk, or other safety principles for automated driving, it is expected to be shown that this has been taken into account.

(b) Whilst many aspects of competent and careful driving are common everywhere, there are also differences in the behaviours, skills and competencies expected by driving standards authorities in different countries. A driving behaviour that is appropriate and safe in one country may be inappropriate in another, resulting in a reduction of safety level. Traffic safety statistics also differ between countries, and where manufacturers use statistical comparisons as part of the demonstration of safety of the ADS, it is important that the comparisons are made to the relevant cohort of human drivers. It is understood that not all human drivers behave competently and carefully at all times, and so the manufacturer would need to explain how the subset of competent and careful driving has been extracted from an overall dataset.

Where national authorities have published guidance on expected safety levels and/or behaviours, it is expected to be shown that this has been taken into account.

(c) As traffic rules differ between countries, are largely written with human driving in mind, and can require interpretation on a case-by-case basis, it is important for manufacturers to have correctly implemented any specificities for each country of operation. The information provided for this item could include details of the relevant SMS processes which cover the identification, interpretation, and assessment of traffic rules, as well as specific examples related to particular national rules.

f) The ISMR requirements expect the manufacturer to provide certain reports to the

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'relevant authority'. For the purpose of type approval, this is primarily the granting approval authority. However, the ADS regulation is without prejudice to "provision of data to other authorities", and it is expected that many Contracting Parties will have their own national requirements for performance reporting. The provision of this information will give the receiving CP the opportunity to verify that the manufacturer has identified the relevant national authorities concerned.

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B. Section [4 (UNR)] – Approval

3. Paragraph 4.1.1.1 (UNR)

Pr.-Undefined

“In the case of ADS vehicles that are subject to the requirements of UN Regulation No. 79, the approval authority or its designated technical service shall verify the compatibility between the safety concept of the ADS steering equipment and the safety concept of the ADS.”

Explanation of the requirement

UN Regulation No. 79, as adapted to be fit for ADS vehicles, does not make specific prescriptions on the level of redundancy required for ADS steering (for example the amount of stored energy). Instead, the manufacturer provides a safety concept and the Approval Authority verifies the performance of the system under failure conditions against this concept.

The necessary manoeuvres to reach a safe and acceptable MRC under any reasonably-foreseeable circumstances are a function of the ODD of the ADS. It is therefore important at the time the ADS is approved to ensure that the safety concept certified for the steering system is sufficient for the ADS vehicle to be free from unreasonable risk in the case of steering failures during operation.

Deleted: (4.1.1.1) The special provision requested by FADS (and proposed in the UK document to WS09) for checking compatibility with the R79 safety concept
<"Clause Statement">

4. Paragraph XX (GTR) / XX(UNR)

Pr.-Undefined

(4.1.2) Confirmatory testing (in particular as relevant to the 1958 Agreement, which might not be covered in the more general testing guidance).

<"Clause Statement">

Explanation of the requirement

<Explanation Text>

Deleted: <Explanation Text>

Commented [EJES]: Not clear what is expected here. In addition to the Guidance part

5. Paragraph XX (GTR) / XX(UNR)

Pr.-Undefined

(4.4) Competence of TAA / TS Personnel

<"Clause Statement">

Explanation of the requirement

<Explanation Text>

6. Paragraph 4.5 (UNR)

Pr.-Undefined

“Approvals covering ADS features that can be active in the territory of a Contracting Party other than the Contracting Party issuing the approval.”

Explanation of the requirement

These provisions are intended to facilitate the process of Mutual Recognition under the 1958 agreement by helping to ensure that that application and interpretation of the ADS regulation are harmonised between the manufacturer / granting Approval Authority on one side, and the Authorities of Contracting Parties where the ADS vehicles will operate on the other. The footnote to this paragraph states that the provisions are subject to ongoing review by GRVA so that its benefit and effectiveness can be monitored, and it can be modified or removed when and if deemed necessary.

Deleted: <Explanation Text>

7. Paragraph 4.5.1 (UNR)

Pr.-Undefined

Before granting an approval according to this UN Regulation, the granting approval authority shall inform the Approval Authorities of the respective Contracting Parties in whose territory any feature of the Automated Driving System can be active. The following information shall

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be provided by the granting approval authority to each receiving approval authority as soon as the granting approval authority has all necessary information from the manufacturer but at the latest 30 days prior to granting the approval:

- (a) The information described in paragraphs 3.2.3.(a) to (f) above.
- (b) Details of requirements where a significant interpretation has been made (if any)

This information shall be considered as confidential by the receiving approval authority.

Explanation of the requirement

TBC

8. Paragraph 4.5.2. (UNR)

“Following a review of the documentation described in paragraph 4.5.1, the receiving Approval Authority may provide comments to the granting Approval Authority on the interpretation or application of this UN Regulation with respect to their territory. Comments shall be provided within 30 days of receipt of the documentation described in paragraph 4.5.1. In case of dispute, a detailed justification shall be provided by the receiving approval authority making the comments to the granting approval authority.”

Explanation of the requirement

TBC. To include:

- What does the review consist of?
- What does it focus on?
- Not a full re-audit. Looking at high level application/interpretation and national specificities – has the receiving country been properly taken into account.
- Explanation of the kind of comments that might be made, focussing on national specificities.

9. Paragraph 4.5.2.1. (UNR)

“Having taken account of any comments, the granting approval authority shall grant the approval with the respective Contracting Party(ies) included in the list in Appendix to Annex 1.”

Explanation of the requirement

TBC

10. Paragraph 4.5.2.2. (UNR)

“If it is not possible for the granting approval authority to take into account the comments received or in case of any dispute between Contracting Parties, this shall be settled in accordance with Article 10 and Schedule 6 of the 1958 Agreement.”

Explanation of the requirement

TBC

11. Paragraph 4.5.2.3. (UNR)

“The granting approval authority remains responsible for all decisions regarding the granting of an approval under this Regulation.”

Explanation of the requirement

TBC

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C. Section [4.1 (GTR) / 6.1(UNR)] – Performance of the DDT

12. Paragraph XX (GTR) / XX(UNR) *Pr.-High*

Nominal/Critical/Failure scenarios and situations: clarify when nominal becomes critical, that it is scenario not ADS focused and what happens if a failure occurs during a critical scenario. Dense topic central to the section

<"Clause Statement">

Explanation of the requirement

The regulation distinguishes between "scenarios" used in testing and "situations" which occur in the real world. Both scenarios and situations can be categorised as nominal, critical or failure depending on the conditions within them. This classification is not based on the capabilities of the ADS but rather on the characteristics of the situation itself.

Nominal situations are the baseline case, in which neither critical nor failure criteria are met. A situation is critical if prompt action by the ADS is needed to avoid or mitigate the risk of a crash, and failure situations are those in which the ADS, the vehicle, or one of their components has failed in some way that impairs the ability of the ADS to perform the DDT. If the ADS causes a collision in an otherwise nominal situation it is a noncompliance with the nominal requirements (i.e. it is not reclassified as a critical situation due to an error by the ADS). In addition, complexity alone does not make a situation critical. A nominal scenario can be complex with lots of road users interacting with each other but no prompt action required by the ADS in order to avoid a collision.

The distinction is important as different DDT requirements apply across the different categories, nominal requirements only apply "as far as reasonably practicable with the aim of minimising overall risk" in critical and failure situations. In all situations the ultimate goal is to minimise the risk of harm.

Examples

Nominal

- A queue of cars stopped at a traffic light
- A roundabout
- Urban street with pedestrians crossing ahead

Critical

- A pedestrian runs out in front of the ADS vehicle
- Harsh cut in on the highway
- ORU reversing into the ADS vehicle

Failure

- Sensor failure
- Tyre puncture
- Power loss to ADS

It should be noted that the concept of a critical occurrence is not necessarily linked to a critical situation despite both using the term "critical".

13. Paragraph 4.2.2.2.3 (GTR) / 6.2.2.2.3 (UNR) *Pr.-Medium*

"The feature activation procedure (e.g., sequence of actions and states) shall take into account relevant recommendations or standards."

Explanation of the requirement

Commented [Sec6]: The proposal is for specific terms within the regulation, and not an independent clause. To improve readability and clarity, can we move this as a separate appendix under guidance section?

Commented [ADS1904r17]: Whilst we agreed the states not interpretation this is probably not the correct line to reference since its about human factors (definitions would be better)

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Only those ADS states used in the regulation are defined. This list contains terms not used in the regulatory text, but are included here for completeness. Some requirements apply when the ADS is not performing the DDT (e.g. determining whether it is in the ODD in order allow activation) and so it is useful to have common terms to describe these states to avoid confusion.

“ADS Off” means the ADS is not performing any activity.

“ADS On” means either an ADS feature is performing the DDT (ADS feature active) or the system is in ADS Standby.

“ADS Standby” means no ADS feature is performing the DDT, however the ADS may be performing some other activity (e.g. determining whether the vehicle is in the ODD).

“ADS Feature Active” means the operational state in which an ADS Feature is performing the DDT.

“(ADS feature) available” means the operational state of an ADS feature pursuant to the ADS verification that the ODD conditions of the feature have been met at a time prior to activation of the feature.

“(ADS feature) Activation” means the act of changing the operational state of the ADS feature, from available to active, i.e. the state in which it is performing none of the DDT to the state in which it is performing all of the DDT.

“(ADS feature) Deactivation” means the act of changing the operational state of the ADS feature, from the state in which it is performing all of the DDT to the state in which it is performing none of the DDT. (This could be a user-initiated deactivation to manual driving, a system-initiated deactivation to manual driving or the system returning to ADS Standby whilst the vehicle is stopped.)

“Switching On” means the act of changing the status from ADS Off to ADS On and in Standby.

“Switching Off” means the act of changing the status from ADS Standby to ADS Off.

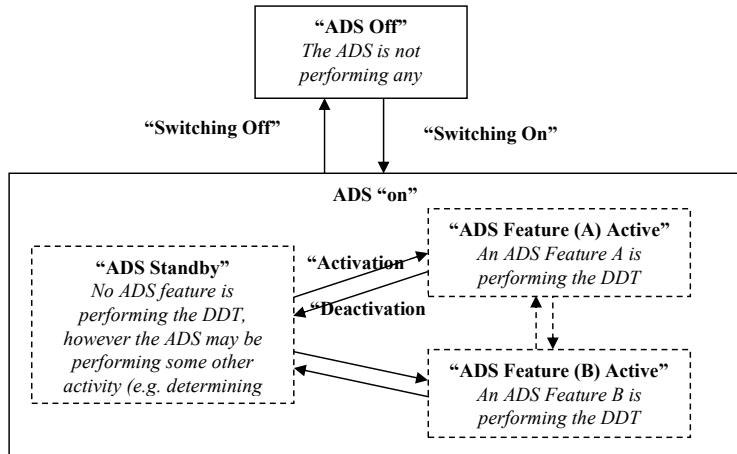


Figure 1. Diagram showing the relationship between the different possible ADS states

14. Paragraph 4.1.2.1 (GTR) / 6.1.2.1 (UNR)

Pr.-Medium

“The driving behaviour of the ADS shall not cause a collision.”¹³

Explanation of the requirement

Commented [ADS1904r18]: Some discussions on this requirement are still ongoing

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Footnote acknowledges that establishing causation can be complex, and not always possible. However, where it is established that the behaviour of an ADS caused a collision, this is a non-compliance with this requirement.

Causation can be determined by:

- The manufacturer's ISMR investigation
- Authority investigation or
- A court of law.

15. Paragraph 4.1.2.5 (GTR) / 6.1.2.5 (UNR)

Pr.-Medium

"The ADS shall detect and respond to priority vehicles in accordance with the applicable traffic law(s)"

Explanation of the requirement

This requirement allows for an ADSF-1 to transfer control to the fallback user (fallback response) in the case of a priority vehicle interaction. For both ADSF-1 or ADSF-2, the manufacturer may also use non-ADS strategies to ensure the priority vehicles are responded to correctly. The manufacturer should follow guidance and best practice engaging with emergency services prior to deployment.

16. Paragraph 4.1.2.6 (GTR) / 6.1.2.6 (UNR)

Pr.-Medium

"The ADS shall comply with traffic rules in accordance with application of relevant law within the area of operation"

Explanation of the requirement

This requirement uses the terms "application of relevant law" to refer to how the law is applied in practice, this covers compliance with case law for situations where a human driver would not be held liable for technically breaking a traffic rule, (e.g. entering an empty bus lane to avoid a broken down vehicle). The intention is to allow flexibility for the ADS to deal with complex real world situations but is not intended for the manufacturer to ignore traffic rules if other humans are (e.g. speeding on the motorway) in these situations case law would show humans in similar situations were still held liable. This provision is also intended to cover cases where traffic rules conflict with one another to still allow the ADS to take appropriate. The term "area of operation" refers to the specific jurisdiction the ADS is operating in and the applicable traffic rules that apply in that jurisdiction.

17. Paragraph 4.1.2.8 (GTR) / 6.1.2.8 (UNR)

Pr.-Medium

"The ADS shall avoid collisions with safety-relevant objects"

Explanation of the requirement

Safety relevant objects are defined as an object that, if collided with, is likely to cause non-trivial damage to the vehicle or that is likely to pose a safety risk to other road users, vehicle occupants, or infrastructure.

Nontrivial damage is a threshold defined by the manufacturer in 7.3.2.3. This is intended to allow for cases where hitting some objects (e.g. a plastic bag) may be safer than the ADS taking evasive action or stopping to avoid it. When discussed in the group nontrivial was intended to cover anything more than a scratch or a light dent to the ADS vehicle, however this same minor damage applied to another road user may be above this threshold and considered nontrivial.

18. Paragraph 4.1.2.11 (GTR) / 6.1.2.11 (UNR)

Pr.-Medium

"The ADS shall have strategies in place to appropriately detect and respond to instructions from road safety agents"

Deleted: It is acknowledged that establishing causation can be complex, and not always possible. However, where it is established that the behaviour of an ADS caused a collision, this is a non-compliance with this requirement. Causation can be determined by the manufacturer's ISMR investigation, authority investigation or a court of law.

Commented [ADS1904r19]: Discussions are ongoing regarding whether the definition of safety relevant object can be improved

Deleted: Safety relevant objects are defined as⁴ Nontrivial damage is defined by the manufacturer in 7.3.2.3. This is intended to allow for cases where hitting some objects (e.g. a plastic bag) may be safer than the ADS taking evasive action or stopping to avoid it. When discussed in the group non trivial was intended to cover anything more than a scratch or a light dent.

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Explanation of the requirement

This requirement allows for the response for an ADSF-1 to transfer control to the fallback user (fallback response) in the case of a road safety agent interaction. For either feature type the manufacturer may also use non-ADS strategies to ensure the road safety agents are responded to correctly.

19. Paragraph 4.1.3.3.1 (GTR) / 6.1.3.3.1 (UNR) *Pr.-Medium*

“The ADS shall not resume travel unless:

- (a) The safe operational state of the ADS vehicle has been verified, and
- (b) It is permissible under the applicable laws.”

Explanation of the requirement

This requirement does not allow the ADS to move off following a collision until both points are fulfilled, its is permissible under applicable law and the operational state has been verified. This might be accomplished in a variety of ways, the ADS checking itself, the fallback user checking the operational state or a third party confirming safety in some way.

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20. Paragraph 4.1.3.3.2 (GTR) / 6.1.3.3.2 (UNR) *Pr.-Medium*

“Notwithstanding para. 4.1.3.2.1.(a), if the collision occurred while an ADSF-2 was active, when directed by a road safety agent, the ADS shall move the vehicle unless the ADS determines that the manoeuvre poses an unreasonable safety risk or is not technically possible due to damage. Alternatively, the safety case shall describe how the road safety agent's instructions will be complied with in such circumstances”

Explanation of the requirement

This requirement provides an exception to the previous one, specifically when the operational state has not yet been verified but there is still a need to move the vehicle in an emergency. E.g. moving the vehicle off the road to allow emergency services access or to move to a safer location away from a burning vehicle. This may be accomplished by the ADS or non-ADS strategy. It is limited to ADSF-2 as with an ADSF-1 the fallback user would move the vehicle.

21. Paragraph 4.1.4.3 (GTR) / 6.1.4.3 (UNR) *Pr.-Medium*

“In response to a fault, the ADS shall either:

- (a) Execute a fallback response and prohibit activation of the impacted feature(s) if the fault prevents the ADS from performing the DDT in accordance with the requirements under paragraph 6.1., or
- (b) Adapt its performance of the DDT in accordance with the severity of the fault provided the resulting performance complies with the requirements under paragraph 6.1.”

Explanation of the requirement

Part b of this requirement covers the case where there is a fault that has impaired the ability of the ADS to perform the DDT but it is still capable of doing so with reduced performance. If the ADS continues to perform the DDT in this failure situation with reduced performance then doing so should as far as reasonably practicable continue to meet the nominal situation requirements with the aim on minimising overall risk (i.e. if it would increase risk to fall back to a MRC immediately rather than continuing to a better point, on a highway for example, then that risk assessment should be made considering the failure).

Deleted: Part b of this requirement covers the case where there is a fault that has impaired the ability of the ADS to perform the DDT

22. Paragraph 4.1.4.4 (GTR) / 6.1.4.4 (UNR) *Pr.-Medium*

4.1.4.4/6.1.4.4 The ADS shall be capable of remote termination.

4.1.4.4.1/6.1.4.4.1. The procedure for remote termination of an ADS performing the DDT

Drafting notes:

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shall be capable of triggering include the capability to perform an ADS fallback response.

4.1.4.4.2/6.1.4.4.2 Remote termination of an ADS or ADS feature(s) shall render it unable to be activated until such time as the remote termination is rescinded.

Explanation of the requirement

This requirement refers to the capability to prevent an ADS Feature being used. This could apply to an ADS feature across many vehicles (e.g. a problem has been identified with a feature and it is dangerous to use) or a single vehicle that needs to be stopped in an emergency (e.g. an ADS vehicle is operating out of ODD in a dangerous manner). This covers both the cases where the ADS needs to immediately fallback to a MRC and where it should complete its journey and then no longer allow activation of the feature, which option is appropriate would be dependent on the specific situation. In the case where the remote termination is triggering a fallback to a MRC the ADS still performs the DDT and chooses an appropriate stopping position; this process is not remote driving. This regulation only covers the mechanism for remote termination being possible, national law would need to specify if and when it could be required

Deleted: "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"

23. Paragraph 4.1.6.2 (GTR) / 6.1.6.2 (UNR)

Pr.-Medium

"For ADSF-1, if it has not been possible to complete a system-initiated deactivation procedure, the ADS shall execute a fallback to an MRC. During the fallback to MRC the user may initiate deactivation of the ADS."

Explanation of the requirement

The text "not been possible to complete a system-initiated deactivation procedure" means the case where the normal system-initiated deactivation process (i.e. transition demand) has not resulted in the fallback user taking the role of the driver. This could be due to fallback user not responding in the transition period determined by the manufacturer, or some external event preventing that full transition period being possible. In this latter case the fallback user may still want to take over performance of the DDT during this fallback to an MRC, rather than wait for the vehicle to come to a stop.

24. Paragraph 4.3.7 (GTR) / 6.3.7 (UNR)

Pr.-Medium

List of non-DDT resulting from the screening taskforce and for which existing regulation cannot be updated before June 2026

"While an ADSF-2 is active, the ADS shall manage relevant non-DDT-related tasks (which would otherwise be performed by a driver) in accordance with the manufacturer's safety case. Alternatively, where the ADS does not perform such necessary tasks, the safety case shall describe how these tasks are performed."

Explanation of the requirement

Non-DDT tasks

The following list shows non DDT tasks that have been identified and the safety case shall describe how they are handled. This is a non exhaustive list and not items will be relevant for all systems.

Commented [ADS1904r110]: This list might be better as an annex. FADS also developed some guidance on how to fulfil these non DDT tasks, is it appropriate to include that?

Checking the correct working condition of the vehicle before driving, including:

- Brake wear
- Tyre wear/tear pressure etc
- Fluid levels
- Lamps operation/angle
- Trailer correctly coupled
- Energy level

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- Wheel alignment
- Locked status of doors, hood, trunk, liftgate, fuel cap etc
- Broken window, body damage or other safety hazard for occupants or other road users
- Actual mass compatible with maximum mass (including weight by axle)
- Dimensions of the vehicle with load compatible with permitted limits
- Position and situation of the load
- Presence of crew member / on-board operator (if required for that ADS feature)
- Availability of remote operation centre (if required for that ADS feature)
- Malfunction without failure warning that would be detected by a human and affects performance: unusual response of steering system, wrong speedometer value, etc.
- Malfunction with failure warning that would be detected by a human and affects performance; Malfunction indicator (MI)
- Driver warning system
- Driver inducement system
- Presence of vehicle registration documents and other mandatory documents (insurance, PTI certificate, etc.) registration plates, mandatory emergency equipment, mandatory local equipment (snow tyres in mountainous areas), etc.
- Absence of temporary general restriction on road use (due to a severe incoming weather event, public safety, curfew, etc.)
- Position of the mobile equipment mounted on the vehicle

Checking the correct working condition of the vehicle while driving, including:

- Broken window, body damage or other safety hazard for occupants or other road users
- Malfunction without failure warning that would be detected by a human and affects performance: unusual response of steering system, wrong speedometer value, etc.
- Malfunction with failure warning that would be detected by a human and affects performance; Malfunction indicator (MI)
- Driver warning system
- Driver inducement system
- Tyre wear/tear, pressure, etc.
- Position and situation of the load

Checking passenger safety before starting to drive, including:

- Safety belts fastened (if applicable)
- Airbags (operational status)
- Number of passengers compatible with vehicle capacity
- Presence and number of person with limited mobility on board
- Presence of person with limited mobility waiting for embarkment
- Absence of passengers (in vehicles of Category Y)

Checking passenger safety while driving, including:

- Safety belts unfastened (if applicable)
- Standing passengers (in vehicles not designed for standing passengers)
- Assess situation inside of the vehicle

Operating non-DDT, safety-relevant elements of the vehicle, including:

- Doors and door locks (doors can be operated automatically, or operated by the on-board or remote operator, or operated locally by the passengers) The doors can be the service doors or the emergency doors
- Tyre wear/tear, pressure, etc.
- Windows and window locks

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- Folding roof, retractable hardtop, panoramic roof, etc.
- Seating position, angle
- Retractable steps (bus)
- Ramp, liftgate, etc.
- Trailer coupling
- Windscreen wipers
- Defrosting and demisting the windscreen
- Climate control
- Hatch, trunk
- Emergency exits
- Indoor lights control
- Signalisation devices (advance warning triangles)

Reacting to signals received from other vehicle systems

- Braking
- Steering
- Lighting
- Powertrain
- TPMS
- Emission control system
- Fire / smoke in a compartment (bus / coach)
- Safety belt unfastened (if applicable)
- Anti-theft
- Doors opened / unlocked (service and emergency)
- Anti-pollution
- Passenger stop request (R107)
- Passenger stop request (R ADS)
- Fire / smoke in a compartment (light duty vehicle) or in the batteries system
- Sensors
- Opening of emergency exits
- Absence/removal of fire extinguishers
- Absence/removal of emergency case
- Absence/removal of removable lamp
- Absence/removal of window breaker device
- Emergency command for door opening
- Emergency window not locked
- Hatches not closed
- Retractable step not retracted

Reacting to signals received from remote systems

- Door movement inversion requested by remote operator
- Door automatic closing process control activation, deactivation or control by remote operator
- Any other command from a remote operator to control a non-DDT element of the vehicle (see above)

Providing assistance to passengers (remote)

- Call and communication with remote supervision centre through audiovisual equipment (and specific for vision or hearing impaired people)

Strategic functions

- Setting an itinerary
- Reacting to on-board or remote operator's modifying an itinerary during operation

Giving information to Passengers

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- Intention to place vehicle in an MRC
- Information for safe operation
- Emergency manoeuvres

Giving information to remote operation centre or on board operator

- Emergency manoeuvres
- Intention to place vehicle in an MRC
- Status of the vehicle, status of the ADS
- Status of the other vehicle systems
- Information useful for operation : speed, outside conditions...
- Environment of the vehicle

Giving information to other road users (if not covered by the ADS conspicuity requirements)

- Emergency manoeuvres
- Intention to place vehicle in an MRC
- Status of the ADS

Giving information to law enforcement & first responders

- Allowing the communication between operators (remote or on-board) and law enforcement officers
- Status of the ADS

25. Paragraph 4.1.2.2 (GTR) / 6.1.2.2 (UNR)

Pr.-Low

“The ADS shall adapt its driving behaviour in line with safety risks: this shall at least include:

- Anticipating the risks in the driving environment to reduce the likelihood of encountering a critical situation,
- Adapting its speed in line with safety risks, and
- Maintaining appropriate distances from other road users by controlling the longitudinal and lateral motion of the vehicle.”

Explanation of the requirement

Adapting driving behaviour in line with safety risks (6.1.2.2): What sort of adaptations are being required

Anticipation of risks in the driving environment (6.1.2.2a): Explanation about anticipatory driving and avoiding critical situations, explanation of driving environment vs ODD

Adapting speed in line with safety risks (6.1.2.2.b): Clarify what sort of safety risks to consider

Maintaining appropriate distances from other road users (6.1.2.2.c): What is an appropriate distance

26. Paragraph 4.1.2.3 (GTR) / 6.1.2.3 (UNR)

Pr.-Low

“The ADS shall avoid unreasonable disruption to the flow of traffic in line with safety risks.”

Explanation of the requirement

What makes a disruption reasonable/unreasonable?

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27. Paragraph 4.1.2.4 (GTR) / 6.1.2.4 (UNR)

Pr.-Low

“The ADS shall detect and respond to objects and events relevant to its performance of the DDT”

Explanation of the requirement

Objects and events relevant to the performance of the DDT (6.1.2.4): Examples of objects that are and are not relevant to the DDT

Examples of objects are relevant include ORU, infrastructure, traffic furniture, not relevant include planes in the sky, people inside buildings, or may include vehicles driving on an adjacent (but completely segregated) road and leaves blowing in the wind.

28. Paragraph 4.1.3.3 (GTR) / 6.1.3.3 (UNR)

Pr.-Low

“In the event of a collision involving the ADS vehicle, if required to stop by applicable law, the ADS shall fall back to an MRC or bring the vehicle to standstill as appropriate. [During this process the user may initiate deactivation of the ADS if the design of the ADS allows.]”

Explanation of the requirement

In this requirement the obligation to stop is determined by whether the applicable law in the area of operation would require a vehicle to stop following that collision. In some cases it would be more appropriate to bring the vehicle to an immediate standstill rather than find an appropriate MRC.

Deleted: In this requirement the obligation to stop is determined by whether the applicable law in the area of operation would require a vehicle to stop following that collision.

29. Paragraph XXXX (GTR) / XXXX (UNR)

Pr.-Low

Fallback response for type 1 and type 2: Explain how the two feature types fallback response may differ

<"Clause Statement">

Explanation of the requirement

<Explanation Text>

30. Paragraph XXXX (GTR) / XXXX (UNR)

Pr.-Low

ODD Exit

<"Clause Statement">

Explanation of the requirement

<Explanation Text>

31. Paragraph XXXX (GTR) / XXXX (UNR)

Pr.-Low

MRC

<"Clause Statement">

Explanation of the requirement

<Explanation Text>

Commented [ADS1904r111]: What specifically should be covered by these points

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D. Section [4.2 (GTR) / 6.2(UNR)] – Interaction between the ADS and its User(s)

32. Paragraph 4.2.1.1. (GTR) / 6.2.1.1(UNR)

Pr. High

“The Safety-relevant information and signals shall be:

- (a) Noticeable by the target user(s) under all operating conditions,
- (b) Comprehensible and unambiguous, and
- (c) Multi-modal (e.g., optical, auditory, haptic) if needed.”

Explanation of the requirement

Safety-relevant information and signals could include:

- (1) [ADS feature status (e.g., active, inactive, available) / The current ADS feature and the switching process between different features / The status of the current ADS feature (e.g., active, inactive, available) and the switching process between different features]
- (2) current role (e.g. fallback user) and current responsibilities of the user; ;
- (3) stages of the deactivation process
- (4) vehicle and ADS faults and consequent adapted performance,
- (5) warnings on attempts to use the controls that are disabled, suppressed or by other means made unavailable,
- (6) information supporting the building up of situation awareness prior to and during a transition from ADS,
- (7) alerts to the user prior to and during the MRC process,
- (8) approaches to ODD exits (pre-alerts to system-initiated transitions) and the estimated time remaining to such exit

Noticeable means that information and signals shall be perceptible (attracting the user's attention, salient enough, loud enough, etc.)

Comprehensible and unambiguous means clear, easily understandable (consider the user's native language, knowledge of terminology and potential deficits in vision and hearing).

Example: good design of a visual indication of current mode might be the use of a distinct background colour to the vehicle dashboard; poor design would be a use of symbol that pops up in the corner of the dashboard or a change in the colour of a persistent symbol in the corner of the dashboard

If needed means that a manufacturer should justify in their safety case why multi-modality is not needed in specific situations. / The manufacturer should demonstrate that the selected modality schemes for safety-relevant information and signals are tailored to address specific driving situations/scenarios. ;

33. Paragraph 4.2.2.1.1 (GTR) / 6.2.2.1.1. (UNR)

Pr. Medium

“The ADS feature shall be designed to prevent misuse and errors in operation by the user.”

Explanation of the requirement

The intention of this requirement is that any action performed by the user while the ADS is performing the DDT should not lead to errors in vehicle operation or misuse of the ADS by the user. [This interpretation is in line with 5.3.2.10 (a) (GTR) / 7.3.2.10 (a) (UNR).]

An example of misuse of an ADSF-1 is [falling asleep / becoming drowsy] while the ADS is performing the DDT.

Deleted: Safety-relevant information relates to: ¶
(1) potential and current role(s) and responsibilities of the user, ¶
(2) stages of the deactivation process, ¶
(3) faults and adapted performance, ¶
(4) trying to use the controls that are disabled, suppressed or by other means made unavailable, ¶
(5) means to (de)activate the ADS, ¶
(6) information related to building up situation awareness, ¶
(7) MRM process, ¶
(8) (approaching) ODD exits, ¶
(9).....

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An example of error in operation would be the possibility to switch off the power train or to switch off the lights while the ADS performs the DDT in the dark.

An example of misuse of an ADS feature that does not permit a user to take over the performance of the DDT is a passenger accidentally acting on the controls provided for manual driving.

34. Paragraph 5.3.2.10 (a) (GTR) / 7.3.2.10 (a) (UNR) *Pr. Undefined*

“The safety concept shall describe measures or strategies, if any, implemented to:

- (a) Prevent or mitigate abuse, misuse, and errors by occupants that could affect safe performance of the DDT (e.g., occupants attempting to access driving controls)

Explanation of the requirement

Abuse: deliberate misuse by a user

Misuse : unintentional misuse by a user

Errors : making a mistake by a user

35. Paragraph 4.2.2.1.2 (a) (GTR) / 6.2.2.1.2 (a) (UNR) *Pr. Medium*

“While an ADS feature is active:

- (a) The controls related to manual performance of the DDT shall be disabled, suppressed, or by other means made unavailable in a manner that prevents unsafe interference with the ADS performance of the DDT....”

Explanation of the requirement

The controls related to manual performance of the DDT include controls related to:

Longitudinal and lateral vehicle control (e.g., accelerator, service brake, parking brake, endurance brake, clutch, manual / automatic gear selector, steering control)

External lighting (e.g., indicators, headlamps, position lamps, work lamps, external indication of ADS status and hazard warning lamps)

Audible warning devices, Indirect signal inputs (e.g., control inputs from devices outside the vehicle).

36. Paragraph 4.2.2.1.2 (b) (GTR) / 6.2.2.1.2 (b) (UNR) *Pr. Low*

“While an ADS feature is active:

- (b) Devices for indirect vision, tell-tales, **indicators**, and non-ADS-related warnings may be disabled, suppressed, or, by other means, made unavailable, and”

Explanation of the requirement

“Indicators” refers to devices that show the magnitude of the physical characteristics that the instrument is designed to sense (see definition in UNR121). “Indicators” in this requirement does not refer to, for example, turn indicators (these are covered under 4.2.2.1.2 a (GTR) / 6.2.2.1.2 a (UNR)).

Non-ADS-related warnings refer to any warnings that are not [immediately] related to the ADS performance of the DDT. For example, the warning to recharge the battery might be disabled when the ADS performs the DDT. However, the warning may be provided when the ADS assesses that the battery has to be recharged for the ADS to continue to perform the DDT.

Deleted: Abuse: deliberate misuse by a user ¶
Misuse : unintentional misuse by a user ¶
Errors : making a mistake by a user

Commented [CJM12]: This is in the safety Case section but is related to users - are we going topic/topic or section/section in the interpretation doc?

Commented [Sec13R12]: Editorial Mistake. (Will be moved to safety case section). So as to avoid changes in auto-numbering, corrections will be done post session.

Deleted: Steering wheel, accelerator, brake pedal, indicator stalk, gear shift, external lighting controls, wiper controls (?),

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37. Paragraph 4.2.2.3.11 (GTR) / 6.2.2.3.11 (UNR)

Pr. Low

“During the deactivation procedure, controls related to manual performance of the DDT, direct view to the outside environment, devices for indirect vision, indicators, warnings, and tell-tales shall be set to an appropriate state for manual driving.”

Explanation of the requirement

The controls referred to here include those covered by paragraph 4.2.2.1.2 (GTR) / 6.2.2.1.2 (UNR). The manufacturer should consider the sequence and timing of the reactivations of the various elements during the deactivation procedure to allow for a safe return of control to the user.

38. Paragraph 4.2.2.1.2 (a)(ii)(GTR) / 6.2.2.1.2 (a)(ii) (UNR)

Pr. Medium

“When a user overcomes a suppression threshold, a user-initiated deactivation procedure shall commence and must follow the requirements of [5.2.2.3.] Overcoming the suppression threshold shall not be the primary means to request a user-initiated deactivation”

Explanation of the requirement

The suppression threshold should be large enough that overcoming it can be determined as a deliberate action. Means to suppress sudden and risky (lateral and/or longitudinal) movements should be adopted.

39.

40.

41. Paragraph 4.2.2.1.3 (GTR) / 6.2.2.1.3 (UNR)

Pr. Low

“The vehicle controls dedicated to the ADS shall be clearly identified and distinguishable to accommodate only the appropriate interactions”

Explanation of the requirement

The means to ensure that controls related to the ADS (e.g. to enable the ADS or begin a user-initiated deactivation) should be distinguishable through size, form, location, colour, type, action type, spacing and/or control shape. The provision aims to promote correct use and is not intended to prohibit multifunction controls. The manufacturer should demonstrate that the design(s) to achieve this meets user needs and does not allow inappropriate interactions or misuse that could lead to safety issues.

42. Paragraph 4.2.2.1.4 (c)(GTR) / 6.2.2.1.4 (c)(UNR)

Pr. Medium

“While an ADS feature is active, it shall inform the user of:

- (a) ADS status information,
- (b) The role of the fallback user in the case of an ADSF-1, and
- (c) Adapted performance of the DDT consequent to some failure of the ADS.

Explanation of the requirement

(a) ADS status information would cover

- which ADS feature is active and whether the ADS is operating as a specific ADSF-1 or ADSF-2 in the case of vehicles with a capability for both modes,
- the presence of faults leading to an imminent fallback response,
- the presence of faults leading to adapted performance of the DDT.

In terms of 4.2.2.1.4.(b), the provision aims to promote reasonable information presentation strategies and fallback awareness, and is not intended to mandate continuous

Deleted: Steering wheel, accelerator, brake pedal, indicator stalk, gear shift, external lighting controls, wiper controls (?),....

Deleted: The suppression threshold should be large enough that it overcoming it can only be considered a deliberate action. Unwanted motion (lateral and/or longitudinal) shall be prevented.

Commented [A10(UI14): This is addressed above under Paragraph 4.2.2.1.2 (GTR) / 6.2.2.1.2 (UNR) (b).

Deleted: Paragraph XX (GTR) / XX(UNR) Pr. Undefined ¶
Non ADS Related Warning ¶
 <"Clause Statement">¶
 <Explanation of the requirement¶
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Commented [A10(UI15): This is not part of the user requirements but came up in discussions of the User Group.

Deleted: Paragraph XX (GTR) / XX(UNR) Pr. Undefined ¶
[A consistent assessment of suppression "strategies".] ¶
 <"Clause Statement">¶
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display of the information

43. Paragraph 4.2.2.1.6 (GTR) / 6.2.2.1.6 (UNR)

Pr. High

“While active, an ADSF-1 shall:

- (a) Continuously assess whether the fallback user is available to assume the role of driver. A fallback user is considered available when
 - (i) the user is at least awake, and
 - (ii) correctly seated in such a way as to enable the fallback user to take control of the DDT at the end of the deactivation procedure....”

Explanation of the requirement

“Correctly seated” means:

- Sitting in the driver’s seat
- Seatback not reclined to such an extent that the user cannot reach the steering wheel;
- Seat not rotated from a forwards position;
- Legs and feet positioned such that the user can easily reach the pedals.

Correctly seated means the fallback user is in a position from which they can safely and promptly resume manual control of the DDT.

This objective shall be met by ensuring the following base conditions are satisfied:

- Seatback not reclined to such an extent that it would prevent the user from reaching and operating the steering wheel within the transition period;
- Seat not rotated from a forwards position in a way that would impede the assumption of control;
- Legs and feet positioned such that the user can promptly and effectively reach and operate the pedals.

This assessment logic, including how the vehicle systems determine compliance with the “timely resumption” criteria, shall be justified and documented in the system safety case.

44. Paragraph 4.2.2.2.1. (GTR) / 6.2.2.2.1. (UNR)

Pr. High

“The ADS shall ensure a safe ADS feature activation.”

Explanation of the requirement

There may be specific conditions that should be considered for a safe feature activation. For example, the ADS user may be required to wear a seatbelt when activating the feature. One could also consider whether it is safe to activate an ADS feature when the ADS can already assess that it will soon be leaving its ODD or whether it is safe to activate an ADS feature during specific driving situations (e.g., [when in a manoeuvre such as overtaking / when in a manoeuvre that would cause a collision risk]).

45. Paragraph 4.2.2.2.3 (GTR) / 6.2.2.2.3 (UNR)

Pr. High

“The feature activation procedure (e.g., sequence of actions and states) shall take into account relevant recommendations or standards.”

Explanation of the requirement

Depending on the use case the activation procedure follows a number of [steps / stages] over time. The [steps / stages] in the activation procedure [are depicted in / may refer to] the figure below from ISO/TR 21959-1:2020, Road vehicles — Human performance and state in the context of automated driving: Part 1: Common underlying concepts.

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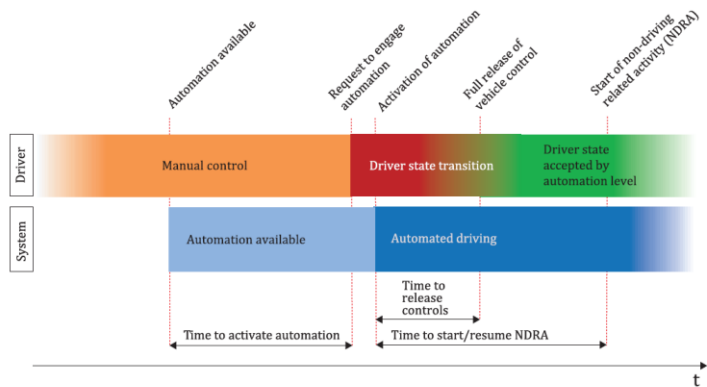


Figure 1 — Driver/system-initiated transition from manual to automated driving

No specific timings are indicated with respect to the stages in the sequence. However, the manufacturer should

- consider adherence to the sequence, and
- justify the timings and how they are adapted to the situation and to individual capabilities and states.

46. Paragraph 4.2.2.3.1 (GTR) / 6.2.2.3.1 (UNR) *Pr. Low*

“The ADS shall follow a safe ADS feature deactivation procedure.”

This requirement is covered by the following paragraphs.

47. Paragraph 4.2.2.3.7 (GTR) / 6.2.2.3.7 (UNR) *Pr. High*

“The deactivation procedure (e.g., sequence of actions and states) shall take into account relevant recommendations or standards”

Explanation of the requirement

Depending on the use case the deactivation procedure follows a number of [steps / stages] over time. The [steps / stages] in the deactivation procedure [are depicted in / may refer to] the figures below from ISO/TR 21959-1:2020, Road vehicles — Human performance and state in the context of automated driving: Part 1: Common underlying concepts.

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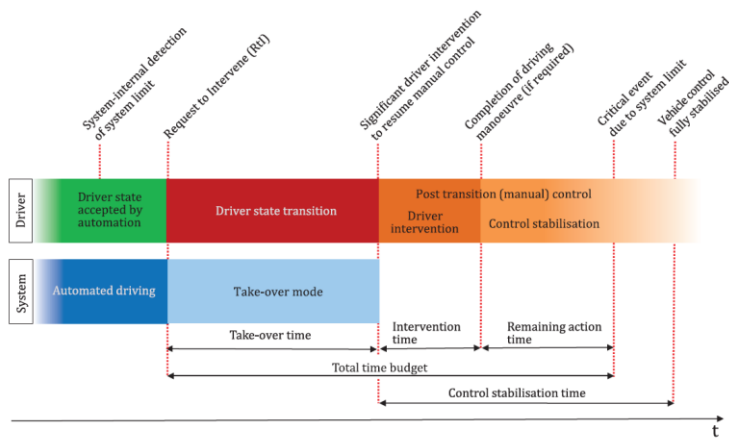


Figure 2 — System-initiated transition from automated to manual driving

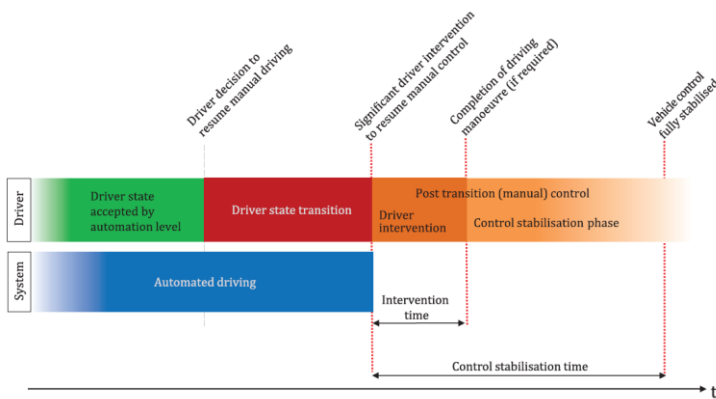


Figure 4 — Optional human-initiated transition of automated to manual driving

No specific timings are indicated with respect to the stages in either sequence. However, the manufacturer should (1) consider adherence to the sequence, and (2) justify the timings and how they are adapted to the situation and to individual capabilities and states.

48. Paragraph 4.2.2.3.5 (GTR) / 6.2.2.3.5 (UNR)

Pr. High

“ADS feature deactivation may be delayed if it is assessed by the ADS that the situation is unsuitable or unsafe for the subsequent mode of vehicle operation. In this case, the user shall be informed of this circumstance”

Explanation of the requirement

The ADS feature should be designed to consider whether it is appropriate to hand over driving control given the current situation and the potential risks from a deactivation at that point in time. Situations in which a handover might currently be risky could include:

Driving in a curve at speed with high lateral g acceleration where the user might not be able to steer the vehicle safely;

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While the ADS feature is executing a lane-change manoeuvre in circumstances where a sudden control action by the user could lead to a collision with a lead or following vehicle;

During an overtaking manoeuvre where a control action from the user could cause a collision with a vehicle being overtaken or a vehicle traveling in the opposite direction.

49. Paragraph 4.2.2.3.8.1 (GTR) / 6.2.2.3.8.1 (UNR) *Pr. Medium*

“A user is considered suitably engaged to resume the DDT when they are at least:

- (a) In contact with the steering control and,
- (b) Their gaze has been primarily directed to a driving task relevant area long enough to be able to resume the DDT safely.”

Explanation of the requirement

This paragraph deals with the moment at the end of the deactivation procedure when the user is about to take back control of the DDT. In (b) the emphasis is on “...to resume the DDT safely.” Depending on the type of ADS feature and the driving situation it may be safer to ensure that the user has looked at several driving relevant areas or just to the most important one.

50. Paragraph 4.2.6.1 (GTR) / 6.2.4.1. (UNR) *Pr. Low*

“Means shall be provided that facilitates user understanding of the functionality and operation of the system”

Explanation of the requirement

The documentation needs to be clear, understandable (e.g. provided in [a user’s native language / a language the user understands] and using simple terminology) and provided in a logical way.

51. Paragraph 4.3.4 (GTR) / 6.3.4. (UNR) *Pr. Low*

“Other ADS requirements”

Explanation of the requirement

explain what is meant by “in alignment with engineering best practices”

Commented [A10(UI16): This is not part of the user requirements

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E. Section [5.1.8 (GTR) / 7.1.8 (UNR)] – Management of post deployment safety

52. Multiple requirements referring to Relevant authority *Pr. High*

UNR 3.2.3. In the case of ADS with features that can be active in the territory of Contracting Parties other than the Contracting Party issuing the approval, the manufacturer shall provide to the granting approval authority the following information for each territory:

(f) Details of the authorities identified for fulfilling the obligation to provide post-deployment notifications and reports to the relevant authority.

UNR/GTR 5/7.1.8.2. The processes for ISMR shall demonstrate the capabilities

(g) To report occurrences to the relevant authority when they occur, and

UNR/GTR 5/7.4.3. The manufacturer shall provide initial notifications, short-term reports, and periodic reports to the relevant authority.

UNR/GTR 5/7.4.4. The manufacturer shall provide the supporting data underpinning the report by means of an agreed data exchange mechanism upon request by the relevant authority.

UNR/GTR 5/7.4.5. The manufacturer shall provide the relevant authority with a description of the data processing (for example: filtering and conditioning) procedure and agree on the steps undertaken to deliver the data supporting the report.

UNR/GTR 5/7.4.7. Initial notifications

UNR/GTR 5/7.4.7.1. The manufacturer shall notify the relevant authority of a critical occurrence without unreasonable delay in accordance with the applicable laws after becoming aware of it.

UNR/GTR Annex 2/4, In-Service Reporting Template: Short-term Reporting

1.1 The following template aims at ensuring that a consistent and comprehensive set of information is delivered to the relevant authority to foster an effective implementation of the short-term reporting ISMR requirements.

UNR/GTR Annex 3/5, In-Service Reporting Template: Periodic Reporting

1.2. The following template aims at ensuring that a consistent and comprehensive set of information is delivered to the relevant authority to foster an effective application of the periodic reporting scheme. Further granularity of the information can be considered depending on the ADS use cases

Explanation of the requirement

The ADS regulation refers to a generic Relevant Authority in the following paragraphs concerning the post deployment safety:

- UNR: 3.2.3., 7.1.8.2., 7.4.3., 7.4.4., 7.4.5., 7.4.7.1. Annex 4 and Annex 5

Commented [CJM17]: This is just a subsection of SMS, wondering if we have any other interpretations required for the SMS section?

Commented [Sec18]: The proposal is for specific terms within the regulation, and not an independent clause. To improve readability and clarity, can we move this as a separate appendix under guidance section?

Deleted: Paragraph 5.1.8.2 (GTR) / 7.1.8.2 (UNR)

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GTR: 5.1.8.2., 5.4.3., 5.4.4., 5.4.5, 5.4.7.1. Annex 2 and Annex 3

In this regard, Relevant Authority means any authority* as identified in applicable law, for whom the manufacturer is required to provide post-deployment notifications and reports related to the operation of Automated Driving Systems (ADS).

UNR only:

Without prejudice to applicable laws, it must be noted that the responsibility for assessing and/or acting upon the content of the post-deployment notifications and reports as per the requirements of this regulation is held by the Granting Type Approval Authority.

The dissemination of information is intended to be limited to the (relevant) authorities for whom such information is relevant. The type of information (e.g. notification, short term and periodic report) provided to each authority can depend on factors such as: the authority's role in approving, verifying compliance or conducting market surveillance of the considered ADS; the area of operation of the considered ADS; and the need to access such information to discharge safety-related responsibilities as defined by the applicable laws.

UNR only:

The intention for the regulation is to follow the following scheme

Table 1 Occurrence dissemination

| Relevant Authority | Initial Notification | Short term report | Periodic Report |
|---|----------------------|-------------------|-----------------|
| Granting Type Approval Authority* | X | X | X |
| Authorities in the territory where the occurrence(s) occurred* | X | X | X** |
| Authorities within the ODD (outside the occurrence territory) * | | X*** | X** |

The table one applies to the requirements 3.2.3., 7.1.8.2., 7.4.3., 7.4.4., 7.4.5, 7.4.7.1. Annex 4 and Annex 5

Concerning the requirement 7.4.4., the relevant authority is intended as Granting Type Approval Authority (GTAA) and Authorities in the territory where the occurrence occurred*

Concerning the requirement 7.4.5. the relevant authority is intended as Granting Type Approval Authority and Authorities in the territory where the occurrence occurred*. However, the agreement on the step to be taken is to be reached with the GTAA.

*Including supranational authorities (if any) who need to access such information as per the criteria listed above

** The regulation does not preclude the possibility to provide country specific information at the agreement of the manufacturer and receiving authority

*** limited only to short term reports for which a corrective action is identified

53. Paragraph 4.4.1 (c) (GTR) / 6.4.1 (UNR)

Pr. High

“The applicable Delta-V thresholds to be met according to the EDR system fitted on the vehicle”

Explanation of the requirement

Different regulatory schemes are in place concerning EDR depending on the contracting party and on the ADS vehicle category. As such, the concept of 'applicable' firstly refers to

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the 'if-fitted' nature of the EDR.

Where the EDR is fitted to the ADS vehicle, the 'applicable' Delta-V trigger in the context of a critical occurrence, this is understood as the data recording triggering conditions related to vehicle velocity changes defined in the relevant EDR Regulation applicable to the vehicle category concerned.

For example, where they apply:

1. UN Regulation No. 160 applies to vehicle categories M1 and N1;
2. UN Regulation No. 169 applies to vehicle categories M2, M3, N2, and N3;
3. U.S. 49 CFR Part 563 applies to passenger cars, multipurpose passenger vehicles, trucks and buses with a GVWR of 3,855kg or less.

The applicable triggering conditions include the longitudinal and lateral velocity change or sudden deceleration thresholds defined in the relevant Regulations. For heavy-duty vehicles, this interpretation excludes the 'last-stop' trigger provided for in UN Regulation No. 169. The 'last-stop' trigger is not representative of critical situations as such it is excluded from the notification reporting.

54. Paragraph XXX (GTR) / 8.4.4 (UNR) *Pr. High*

Confidentiality and publication of information

<Clause statement>

Explanation of the requirement

Information reported under this Regulation is intended to support in-service monitoring and reporting activities by the relevant authorities.

Authorities receiving such information can publish information which are appropriately anonymised (e.g. without the identification of individual manufacturers, vehicles, systems, operators,) and, where relevant, aggregated in a manner that sensitive information are not disclosed. In fact, the core purpose of ISMR is to improve safety, not to assign blame or share full reports publicly. In this perspective, the dissemination of the information is for the purpose of providing both a statistical summary of ADS safety and to document the most important lessons learned and safety challenges faced by ADS technologies.

This interpretation applies to any authority receiving information under this Regulation, whether acting as a Type Approval Authority or as another relevant authority. It does not restrict the exchange of information between authorities where required or permitted by law, nor does it override obligations arising from applicable laws, including freedom of information, data protection, or privacy legislation.

55. Paragraph 5.1.8.2 (h)(GTR) / 7.1.8.2 (h) (UNR) *Pr. High*

"The processes for ISMR shall demonstrate the capabilities:

- (a) To monitor ADS operations,
- (b) To confirm the compliance with the defined safety case and compliance with the performance requirements,
- (c) To identify safety risks related to ADS performance that need to be addressed in the frame of the SMS activities, including instances of non-compliance with ADS safety requirements,
- (d) To manage potential safety-relevant gaps during the in-service operation and to provide the information that allows the ADS to be updated according to the appropriate manufacturer processes,
- (e) To support the development of new or revise existing scenarios,

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- (f) To perform event investigation,
- (g) To report occurrences to the relevant authority when they occur, and
- (h) To share learnings derived from occurrence analysis which have triggered SMS processes for the continuous improvement of the ADS vehicle safety,

Explanation of the requirement

This requirement is an integral part of the manufacturer's Safety Management System (SMS) and it is expected to be implemented through the established SMS processes for occurrence reporting, analysis, and continuous improvement.

In general, any occurrence that has been identified during the post-deployment phase is handled within the SMS framework through the relevant manufacturer processes (e.g., safety risk management, engineering change management, software lifecycle management, supplier management, and operational procedures).

In this context, the requirement aims at ensuring that occurrence analysis is not an isolated activity, but a is undertaken as part of a structured SMS derived process that is traceable from the occurrence to safety decisions, actions, and leads to demonstrable safety improvements (where applicable).

The following flowchart provides an example which is intended to clarify the interconnections among Manufacturer's processes.



It is worth clarifying that an occurrence does not always lead to the identification of a safety learning or a corrective/preventive action. In addition, not all the identified corrective/preventive action must be implemented to close the occurrence. As with improving any engineering system the decision of what to fix and how depends on an overall judgment of the consequences and impact of making a change.

The goal of this requirement is to demonstrate that the occurrence analysis is not an isolated activity, but a structured SMS-driven process which ensures proper links among all the manufacturer processes which is the basis for continuous improvement of the ADS vehicle safety.

Deleted: Continuous Improvement ¶
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F. Section [5.3(GTR) / 7.3 (UNR)] – Safety Case

Commented [CJM23]: There are likely items in section 5.2/7.2 for Test environment?

56. Paragraph 5.3.1.3 (GTR) / 7.3.1.3 (UNR)

Pr. Medium

“The system description shall describe how the Operational Design Domain has been defined for each ADS feature and explain the boundaries of each of the conditions in which the feature is designed to operate. This shall include at least the following:

- (a) Intended area of operation (e.g., jurisdictions, Geographic limitations),
- (b) Roadway characteristics (e.g., road type, road conditions, speed limit),
- (c) Environmental conditions (e.g., weather, illumination), and
- (d) Dynamic elements (e.g., kinds of other road users).”

Explanation of the requirement

The manufacturer may choose to define the ODD of its ADS features in a variety of ways depending on their system design, use case, and the expected operating conditions in the intended area of operation. The four categories in the regulation are expected to be broken down several levels to appropriately define the operating domain.

Each ADS feature should have its own ODD, which may be defined by the same set of attributes with different boundary conditions (e.g. a highway feature may be restricted to highways while a parking feature may be limited to certain parking lots; the highway feature may not be capable of operating in heavy rain while the parking feature may have no such restriction).

The boundaries of each condition refer to the limits of attribute values beyond which the ADS is outside its ODD (e.g. the ADS feature may be designed to operate only in traffic circumstances in which it can maintain a speed between 20km/h (lower boundary) and 50km/h (upper boundary); The ADS feature would be outside of its ODD in traffic situations not within that speed range.).

Certain ODD attributes may be interdependent – for example, the distance at which the ADS can detect objects may be impacted by weather (e.g. fog, rain, snow, dirt, sensor performance reduction etc.). The impact of reduced capability may lead the ADS to travel at lower speeds and/or avoid certain roads that may require better detection capabilities. The links/dependencies between ODD parameters, if any, should be identified as part of the ODD definition.

The ODD should be defined in a manner that its attributes can be measured/tracked by the ADS directly or indirectly to determine if the current operating conditions are within the defined boundaries. (i.e. The ADS needs to know if it is within its ODD)

The ODD defines conditions under which the ADS feature is designed to operate, which may or may not include geographic limitations (sometimes referred to as a geo-fence). Unlike other ODD conditions (e.g., road configuration, weather conditions), geographic limitations are generally not related to the ADS feature’s capabilities. Often such limitations reflect a manufacturer’s choice of where to operate in light of either available vehicle supply or operational support capacity, or they may reflect the boundary of an area of permissible operation approved by a government authority.

For example, an ADS feature may be designed to operate on any controlled access highway with speeds up to 120 km/h (which would constitute a road type ODD condition), but the manufacturer may choose to operate the system in just one geographic area, either due to limited vehicle availability or the need to obtain government approval in other geographic areas.

Removal or modifications of such geographic limitations would not on their own require modification to the applicable safety case, assuming all other ODD conditions are the same in the old and new areas of operation. However, a modification of geographic limitations in

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the ODD that entails operation in an area with different traffic laws than those for which the ADS's ability to comply has been demonstrated in the safety case would likely require an amendment to the safety case demonstrating the ADS's ability to comply with those different local/regional/national rules in the new geographic areas. Similarly, a single ODD could be substantiated in many locations, that is all of these locations fit the ODD definition and bounds. It is also possible that a new location falls within the existing ODD bounds and therefore deployment in that location does not require modification to the ODD, rather confirmation. For clarity, an explanation for the existence of geographic limitations could be included with the ODD definition to clarify the reason for the use of those limitations (e.g. required local/regional approvals, local/regional traffic rules, operational considerations, capability restrictions etc.)

ODD definition standards/best practices:

- ISO 34503 (BSI/PAS 1883)
- AVSC00002202004

57. Paragraph 5.3.1.9 (GTR) / 7.3.1.9 (UNR)

Pr. Medium

“The system description shall indicate the categories of other road users with whom the ADS is designed to interact (e.g., pedestrians, cyclists, etc) and describe the nature of their interactions with the ADS” 5.3.1.9. / 7.3.1.9. ▼

Explanation of the requirement

While the ADS Performance of DDT requirements set out appropriate interaction and collision avoidance rules for other road users, it does not require the manufacturer to explain what those interactions may be. The ADS may be designed with ways to communicate with other road users via light or sound. For example:

- The ADS could have light projections on the road to signal its intentions
- The ADS could use the vehicle horn to warn animals, pedestrians or other vehicles of its presence
- The ADS could be capable of indicating it is yielding to another vehicle or pedestrian via sound, symbol, light flashes or other methods.

Similarly, while the ADS requirements - Interactions between the ADS and its User(s) section set out appropriate interaction requirements with ADS users, it does not require the manufacturer to explain what those interactions may be nor which users are considered in the particular ADS design.

Relevant Paragraphs

2.21. “Other road user (ORU)” means any entity making use of publicly accessible road infrastructure.

4.1.2.4. / 6.1.2.4. The ADS shall detect and respond to objects and events relevant to its performance of the DDT.

4.1.2.7. / 6.1.2.7. The ADS shall interact safely with other road users.

4.1.2.8. / 6.1.2.8. The ADS shall avoid collisions with safety-relevant objects.

58. Paragraphs 5.3.1.4.3 b) (GTR) / 7.3.1.4.3 b) (UNR), 5.3.1.11 (GTR) / 7.3.1.11 (UNR) and 5.3.1.12 (GTR) / 7.3.1.12 (UNR)

Pr. High

“5.3.1.4.3. / 7.3.1.4.3. The outlines shall include how the following functions and aspects are addressed:

- (c) Remote supervision and remote monitoring by a remote supervision centre (if applicable),

5.3.1.11. / 7.3.1.11. If the ADS can request a remote intervention, the system description shall

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describe the nature and process for such interaction.

5.3.1.12. / 7.3.1.12. The system description shall describe the methods of activating, overriding, or deactivating the ADS feature by any or all of: the ADS user (where relevant), remote intervention (where relevant), passengers (where relevant), or other road users (where relevant).”

Explanation of the requirement

[Remote monitoring does not provide the ADS with any tactical or operational DDT support.]

[Remote intervention provides the ADS with tactical DDT support but does not provide operational DDT support. Remote driving (tactical and operational DDT) is not in scope of the regulation.]

[A remote supervision centre is intended to describe a facility that could include the capabilities for remote monitoring and/or remote interventions.]

Remote monitoring can provide strategic information (e.g. a customer is waiting for pickup at this location) to the ADS (i.e. a dispatch centre), it could facilitate interaction with users (i.e. customer support) or call for emergency services/roadside assistance.

Remote intervention (which is referred to as “remote assistance” in SAE J3016) could be requested by the ADS when the ADS is faced with a difficult/ambiguous situation. The ADS may communicate information relevant to the problematic situation and/or present several potential courses of action (e.g. by proposing a trajectory). The remote intervention provides support but does not undertake the DDT directly. The ADS remains in control of tactical and operation DDT functions and fallback response, and can refuse a suggested course of action if it deems it unsafe (e.g. the situation evolves).

Remote interventions allow for a more rapid resolution of issues. They could potentially be performed by a human or software (e.g. a system with more powerful computation or additional information). It could be thought of as a 2nd opinion on how to navigate a difficult situation. e.g. – There are some traffic cones around an area, but it is unclear if the correct path around is to one side or the other.

e.g. – There is an unknown object/interaction/situation, and it is unclear how to navigate it

59. Paragraph 5.3.1.14 (GTR) / 7.3.1.14 (UNR)

Pr. Low

“The system description shall describe the range of end states constituting a mitigated risk condition that can be achieved by the ADS feature, including:

- (a) The conditions that might trigger an attempt to reach a mitigated risk condition,
- (b) The processes by which the ADS feature attempts to reach a mitigated risk condition, and
- (c) The evaluation of risk related to mitigated risk condition end states.”

Explanation of the requirement

While the ADS Performance of DDT requirements set out requirements when an MRC is required, they do not specify the process to achieve the MRC, its end state, nor do they capture other situations that may result in the vehicle attempting to reach an MRC.

It is expected that the conditions that might trigger an attempt to reach an MRC would include the situation in the above requirements but could include others that may be dependent on the system design.

The process to reach an MRC is likely to vary depending on the situation and system capabilities and the range of end states that can be achieved. The process for determining what MRC is appropriate for the situation, the risks involved in reaching the MRC and risks once the MRC is achieved should be documented.

During the process to reach an MRC, it may be appropriate to communicate the ADS is attempting to achieve an MRC (e.g. hazard lights, horn, V2X signals). MRC end states are expected to be fully stopped with parking brake applied (or other means to prevent vehicle

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rollaway) and could include activation of hazard lights.

Possible end state examples:

- Stop in lane (current lane, move to slowest lane)
- Stop on shoulder, emergency lane or bus lane
- Exit highway/main road or clear narrow sections (e.g. bridges) to stop in more appropriate location
- Navigate to nearest parking spot (on-road, rest stop, parking lot)

For ADSF-2 vehicles, the expectation would be that the MRC is more technologically involved than an ADSF-1 since the only fallback response of an ADSF-2 is achieving an MRC (while ADSF-1 can rely on a fallback user). (e.g. an ADSF-2 may exit a highway and stop at a rest stop or parking lot while an ADSF-1 may only be capable of pulling over to the shoulder or stopping in lane)

The reason for initiating an MRC and the surrounding conditions will have an impact on what is possible – a failure or sudden ODD exit may need a very quick MRC while a situation where there is less risk (planned ODD exit) may allow the ADS to take more time to achieve an MRC.

The intent of an MRC is to limit risk and the risks of reaching the MRC should also be a consideration.

Relevant Paragraphs

2.15. “ADS fallback response” means a system-initiated deactivation procedure or an ADS-controlled procedure to place the vehicle in a mitigated risk condition (MRC).

2.20. “Mitigated Risk Condition (MRC)” means a stable and stopped state of the vehicle that reduces the risk of a crash.

4.1.3.3. / 6.1.3.3. In the event of a collision involving the ADS vehicle, if required to stop by applicable law, the ADS shall fall back to an MRC or bring the vehicle to a standstill as appropriate. During this process, the user may initiate deactivation of the ADS if the design of the ADS allows.

4.1.4.3. / 6.1.4.3 In response to a fault, the ADS shall either:

- (a) Execute a fallback response and prohibit activation of the impacted feature(s) if the fault prevents the ADS from performing the DDT in accordance with the requirements under paragraph 4.1., or
- (b) Adapt its performance of the DDT in accordance with the severity of the fault, provided the resulting performance complies with the requirements under paragraph 4.1.

4.1.4.4.1. / 6.1.4.4.1 The procedure for remote termination of an ADS performing the DDT shall include the capability to perform an ADS fallback response.

4.1.6. / 6.1.6. Fallbacks to a Mitigated Risk Condition (MRC)

4.1.6.1. / 6.1.6.1. For ADSF-2, the ADS fallback response shall be to place the vehicle in an MRC. The ADS feature may permit a user-initiated deactivation to interrupt the fallback to an MRC.

4.1.6.2. / 6.1.6.2. For ADSF-1, if it has not been possible to complete a system-initiated deactivation procedure, the ADS shall execute a fallback to an MRC. During the fallback to the MRC, the user may initiate the deactivation of the ADS.

4.1.6.3. / 6.1.6.3. Upon completion of an ADS fallback to an MRC, a user may be permitted to assume control of the vehicle.

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60. Paragraph 5.3.1.16 (GTR) / 7.3.1.16 (UNR)

Pr. Medium

“5.3.1.16. / 7.3.1.16. The system description shall describe how the ADS feature responds to failure situations, including at least one or more following means (as applicable):

5.3.1.16.1. / 7.3.1.16.1. If a partial performance mode of operation is used under certain fault conditions (e.g., in case of severe failures), the system description shall describe:

- (a) Conditions for activation of that mode (e.g., type of failure),
- (b) Resulting ADS feature behaviour and capabilities (e.g., achievement of a mitigated risk condition immediately), and
- (c) Warning strategy to the user/remote supervision centre (if applicable).

5.3.1.16.2. / 7.3.1.16.2. If a second (backup) or a diverse means to realize the performance of the dynamic driving task is used, the system description shall describe:

- (a) The principles of the change-over mechanism,
- (b) The logic and level of redundancy and any built-in checking features, and
- (c) The resulting limits of effectiveness.

5.3.1.16.3. / 7.3.1.16.3. If the chosen response to a system failure entails the removal of an ADS function, the system description shall describe how it is done in compliance with the relevant provisions of this regulation. It shall also describe how all the corresponding output control signals associated with this function are inhibited.”

Explanation of the requirement

While the ADS Performance of DDT requirements set out requirements for performance in failure situations, additional information is required to determine how risks in these situations have been addressed. Three possibilities are considered:

1. Fail-Safe - The failure prevents the ADS feature from performing the DDT (Fallback response & prevent feature from activating) (5/7.3.1.16.3)
 - a. Describe what types of failures could lead to this situation and how the situation might be handled
2. Fail-Degraded - The failure requires limiting the performance of the ADS, but ADS DDT Performance requirements can still be met with those performance limits (e.g. lower operating speed, limiting road types that can be used, avoiding certain intersections/manoeuvres etc.) (5/7.3.1.16.1)
 - a. Describe what failures lead to performance limits and what those limits may be and how the transition between full operation and degraded operation occurs
 - b. Note that certain partial performance modes may have already been considered depending on how the ODD was defined (e.g. fault causing lower visibility leading to lower operating speed). Other partial performance modes should be explained including what types of failures can lead to partial performance modes, and how the ADS feature performance or capabilities are impacted.
3. Fail-Operational - The failure does not cause any reduction of performance (i.e. “fail operational” due to redundancy or design) (5/7.3.1.16.2)
 - a. Describe what failures would not cause any performance reduction and how the system may react to detecting such a failure (e.g. switch over to a redundant component)
 - b. How those failures might be dealt with in longer-term (e.g. schedule maintenance to repair/replace component)

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- c. Additional information may be required to understand why a failure would not lead to degraded operation or prevent a feature from operating. (e.g. redundant components exist, failure does not impact DDT performance etc.)

Relevant Paragraphs

2.23. "Failure" means the termination of an intended behaviour of a system or component due to fault manifestation.

2.24. "Fault" means an abnormal condition that can cause a system or component to fail.

4.1.4.1. / 6.1.4.1. The requirements for DDT performance in nominal situations shall continue to apply during failure situations as far as is reasonably practicable under the specific circumstances with the aim of minimising overall safety risks.

4.1.4.3. / 6.1.4.3. In response to a fault, the ADS shall either:

- (a) Execute a fallback response and prohibit activation of the impacted feature(s) if the fault prevents the ADS from performing the DDT in accordance with the requirements under paragraph 4.1., or
- (b) Adapt its performance of the DDT in accordance with the severity of the fault, provided the resulting performance complies with the requirements under paragraph 4.1

61. Paragraph 5.3.2.7 (GTR) / 7.3.2.7 (UNR)

Pr. Medium

“The safety concept shall describe the conditions that the automated driving system is reasonably likely to encounter on its trip(s), including, but not limited to, environmental and geographical conditions, and/or the presence or absence of certain traffic or roadway characteristics, and explain how those expected conditions compare to the ODD of the ADS as described pursuant to paragraph 5.3.1.3. of this Regulation”

Explanation of the requirement

The main objective of this paragraph is to compare the ODD (design – defined in 5/7.3.1.3) with the expected operating conditions (also known as Target operating domain) which may not be identical. (e.g. the ODD may be divided highway with no pedestrian access, but it is expected that pedestrians may be encountered in the case of a vehicle breakdown or emergency).

The expected operating conditions should have been identified via safety and/or engineering processes and the ODD properly defined considering those conditions to avoid ODD exits for conditions that are expected with a certain frequency.

The wording is intended to exclude consideration for very unlikely events (e.g. space debris falling) but include events that expected even if in relatively low frequency (e.g. animal crossing the roadway)

Reasonably likely but infrequent or low risk expected conditions may be outside the ODD leading to a fallback response. However, expected conditions with higher frequency or risk profiles that are outside a feature’s ODD might indicate that the feature cannot safely operate in that environment.

62. Paragraph 5.3.2.8 (GTR) / 7.3.2.8 (UNR)

Pr. Medium

“The safety concept shall describe measures or strategies, where applicable, implemented to:

- (a) Prevent or mitigate abuse, misuse, and errors by occupants that could affect safe performance of the DDT (e.g., occupants attempting to access driving controls),
- (b) Prevent, mitigate, or deter harm to occupants caused by external sources (e.g.,

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unauthorised persons attempting to access a vehicle with occupants), and

(c) Prevent, mitigate, or deter abuse and misuse of the vehicle or its systems from external sources. (e.g., objects placed on vehicles during operation, attempts to damage a vehicle).”

Explanation of the requirement

This is intended to encompass strategies that may be taken to prevent/avoid/mitigate situations which would normally be handled by a driver. e.g.

- Disabling driving controls
- Installing physical barriers around driving controls
- Making noise/light (honking horn, loudspeaker, alarm, hazard lights, high beams)
- Locking doors
- Calling emergency services/remote supervision centre

63. Paragraph 5.3.2.9 (GTR) / 7.3.2.9 (UNR)

Pr. Medium

“The safety concept shall describe strategies to limit sudden ODD exits and frequent activation and deactivation situations.”

Explanation of the requirement

As there is risk in performing a fallback response (whether transition to driver or achieving an MRC) the ADS should have strategies to limit ODD exits to the extent possible.

The ADS is required to recognise the conditions and boundaries of its ODD and anticipate foreseeable exits.

This requirement seeks to understand the strategies used to reduce the possibility of:

- Sudden ODD exits
(e.g. monitor weather forecasts for upcoming conditions that may be outside the ODD; limit operation on certain roadways during certain times of day/events).
- Frequent activation and deactivation situations (i.e. operating very near the boundaries of the ODD)
(e.g. hysteresis; only allowing activation of feature if well within ODD limits and only triggering a fallback if a sustained ODD exit has been detected)

Relevant Paragraphs

4.1.5.1. / 6.1.5.1. The ADS shall recognise the conditions and boundaries of the ODD of its feature(s).

4.1.5.4. / 6.1.5.4. The ADS shall execute a fallback response when one or more ODD conditions of the feature in use are no longer met.

4.1.5.5. / 6.1.5.5. The ADS shall be able to anticipate and safely respond to foreseeable exits from the ODD of each feature.

64. Paragraph 5.3.3.1 (GTR) / 7.3.3.1 (UNR)

Pr. High

“5.3.3.1. / 7.3.3.1. The safety case shall include a series of claims for each of which there must be at least one supporting argument.

5.3.3.1.1. / 7.3.3.1.1. Each argument shall be supported by at least one piece of evidence.

5.3.3.1.2. / 7.3.3.1.2. Each claim, argument, and piece of evidence shall be uniquely labelled but may be used more than once (i.e., a piece of evidence may support more than one

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argument).”

Explanation of the requirement

The safety case is composed of a series of claims supported by arguments and evidence.

Examples of evidence that could be provided

Example 1: (ADS meets the relevant ADS requirements of this regulation)

Claim C-001: The ADS can detect and respond safely to faults

- o Subclaim SC-001: The ADS detects faults, malfunctions and abnormalities that compromise its capability to perform the DDT within the ODD (req. 4/6.1.4.2)
 - Argument A-001: Analysis was made to determine which components/systems could impact the performance of the DDT if they exhibit a fault, malfunctions or abnormality (E-001). An algorithm is used to detect such faults (E-005) and is installed in such a way that it can monitor those components (E-004). A test procedure was created to simulate a fault in a component (E-002). The test procedure was run multiple times to generate faults on different components and all tests resulted in a positive detection and appropriate action taken (E-003).
 - Evidence E-001: Analysis determining which components/systems could impact the performance of the DDT if they exhibit a fault, malfunction or abnormality
 - Evidence E-002: Testing procedure to generate faults, malfunctions and abnormalities in a component
 - Evidence E-003: Test results showing algorithm can detect faults, malfunctions and abnormalities when tested as per testing procedure (E-002) & results in a fallback response
 - Evidence E-004: Diagram/schematic showing where fault detection algorithm is installed and its connections with monitored components
 - Evidence E-005: Description of how the algorithm functions, assumptions and capabilities
- o Subclaim SC-002: In response to a fault the ADS executes a fallback response (req. 4/6.1.4.3)
 - Argument A-002: When the detection algorithm detects a fault, malfunction or abnormality (see SC-001), a fallback response is triggered (E-005). No adaptation in performance is used. This is confirmed by running testing procedure (E-002) with results (E-003).
 - Evidence E-002: Testing procedure to generate faults, malfunctions and abnormalities in a component
 - Evidence E-003: Test results showing algorithm can detect faults, malfunctions and abnormalities when tested as per testing procedure (E-002) & results in a fallback response
 - Evidence E-006: Description of how a fallback is triggered when algorithm (E-005) detects a fault, malfunction or abnormality.

Example 2: (ADS is free from unreasonable risks.)

Claim C-002: The acceptance criterion provides an appropriate means to evaluate risk

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- o Subclaim SC-003: The acceptance criterion is predicated upon appropriate performance indicators
 - Argument A-003: The performance indicators selected are in line with state of the art metrics
 - Evidence E-007: Procedure that outlines use of metrics
 - Evidence E-008: Testing results that show implementation of metrics
- o Subclaim SC-004: The acceptance criterion leverages appropriate benchmarks
 - Argument A-004: The benchmarks selected are in line with state of the art benchmarks
 - Evidence E-009: Procedure that outlines use of benchmarks specific to the ODD and use-case
 - Evidence E-010: Testing results that show implementation of metrics compared to benchmarks
- o Subclaim SC-005: The methodology provides credible evidence that the stated acceptance criterion is appropriately evaluation and supports the determination of absence of unreasonable risk
- o Subclaim SC-006: The methodology provides appropriate coverage
 - Argument A-005: The methodology provides adequate coverage according to a taxonomy (known unsafe) and includes feedback mechanism for the discovery of unknown unsafe
 - Evidence E-011: Taxonomy
 - Evidence E-012: Coverage report of Taxonomy
 - Evidence E-013: Feedback process for discovery
 - Evidence E-014: Log of newly discovered unsafe events
- o Subclaim SC-007: The methodology provides credible evidence
 - Argument A-006: The methodology uses robust and conservative methods, including qualified tools, which results in outputs of adequate fidelity and confidence.
 - Evidence E-015: Statistical method to calculate conservativeness
 - Evidence E-016: Conservativeness report
 - Evidence E-017: Process and training for using tools
 - Evidence E-018: Tool qualification report
 - Evidence E-019: Tool training report

Relevant Paragraphs

2.32. “Safety case” means structured documentation that provides a compelling, comprehensible, and valid case that the ADS meets the relevant ADS requirements of this regulation and is free from unreasonable risks to the ADS vehicle user(s) and other road users.

2.32.1. “Argument” means a written explanation within a safety case that captures the logical connections between a claim and the evidence for achievement of that claim.

2.32.2. “Claim” means a verifiable statement within a safety case.

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2.32.3. “Evidence” means material pertinent to demonstrating the validity of a claim, such as process documentation, physical test results, simulation results, analyses with supporting data, etc.

65. Paragraph 5.3.3.7 (GTR) / 7.3.3.7 (UNR)

Pr. Low

“Each requirement defined under paragraphs 5.3.3.2, 5.3.3.4, 5.3.3.6., and as may be defined by the manufacturer shall have at least a claim”

Explanation of the requirement

The safety case needs to demonstrate that:

1. the ADS meets the requirements of the regulation and
2. that it is free of unreasonable risks

To demonstrate it meets the requirements, there should be at least one claim (or subclaim) that presents argumentation and evidence that each requirement is met. The main requirements for the ADS are:

- section 4/6 as described in 5/7.3.3.2 b),
- identified through the application of SMS process as described in 5/7.3.3.4, and,
- suitability of testing approaches as described in 5/7.3.3.6

To demonstrate that the ADS is free of unreasonable risk, the manufacturer may have claims beyond those set out in the requirements of this regulation. There should be at least one claim (or subclaim) that presents argumentation and evidence that the ADS is free of unreasonable risks.

Relevant Paragraphs

5.3.3.2. / 7.3.3.2 The claims, arguments, and evidence shall be understandable, logical, correct, and robust and shall demonstrate that:

- (a) The ADS is free of unreasonable risk to ADS user(s) and other road users and
- (b) The ADS meets the applicable requirements of this regulation in each of the following areas:
 - (i) Performance of the DDT (paragraph 4/6.1.),
 - (ii) User interactions (paragraph 4/6.2), except for the user information requirements under paragraph 4/6.2.5., and
 - (iii) Other requirements (paragraph 4/6.3.).

5.3.3.4. / 7.3.3.4 The claims, arguments, and evidence shall describe how the SMS processes (section 5/7.1) have been applied to manage ADS safety throughout the lifecycle of the system.

5.3.3.6. / 7.3.3.6 The claims, arguments, and evidence shall demonstrate that the approach to testing is suitable for the demonstration of the safety case and the compliance with performance/functional requirements.

66. Paragraph 5.3.3.9 (GTR) / 7.3.3.9 (UNR)

Pr. Low

“Evidence supporting argumentation shall consist of test results or analysis (e.g., system layout and schematics, photographs, required documentation, etc.) as appropriate.”

Explanation of the requirement

Evidence supporting a claim is not restricted to testing results. It could include any supporting documentation the manufacturer believes supports its argumentation that the claim is met. The evidence should be relevant to the claim as explained in the argumentation rather than a

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series of unrelated documents without explanation. Examples of possible non-testing evidence:

- Testing procedures/protocols
- Diagrams / schematics
- Code
- Photographs / video
- Certificates
- Analysis information
- Research studies/publications
- Internal standards

Relevant Paragraphs

2.32.3. "Evidence" means material pertinent to demonstrating the validity of a claim, such as physical test results, simulation results, analyses with supporting data, etc.

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G. Section [6.2 (GTR) / 8.2 (UNR)] – Assessment of Test Environment

Commented [CJM24]: No items for 5.4 (Post Deployment Safety) or 6.1 (Audit of SMS) ?

67. Paragraph 6.2.1 (GTR) / 8.2.1 (UNR)

Pr. Undefined

Virtual testing criticality assessment

Personnel competencies for simulation

Possible approaches for simulation verification

Possible approaches for simulation validation

Criteria to evaluate the correlation between test results and the manufacturer's data

<"Clause Statement">

Explanation of the requirement

<Explanation Text>

Examples of documents/evidence that could be provided

<Example Text>

Commented [EJE25]: At this stage ,we do see this topic more suitable for guidance (it is already included there)

68. Paragraph 6.2.2 (GTR) / 8.2.2 (UNR)

Pr. Undefined

Track Testing - Methods for assessing the manufacturer's testing facilities/environment/capabilities to generate evidence supporting the safety case

<"Clause Statement">

Explanation of the requirement

<Explanation Text>

Examples of documents/evidence that could be provided

<Example Text>

Commented [EJE26]: At this stage ,we do see this topic more suitable for guidance (it is already included there)

69. Paragraph 6.2.3 (GTR) / 8.2.3 (UNR)

Pr. Undefined

Real World Testing - Methods to evaluate the combined coverage of virtual/track/real-world testing as part of the safety case testing assessment

<"Clause Statement">

Explanation of the requirement

<Explanation Text>

Examples of documents/evidence that could be provided

<Example Text>

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70. Paragraph 6.2.3 (GTR) / 8.2.3 (UNR)

Pr. Undefined

Real World Testing - Methods to evaluate the combined coverage of virtual/track/real-world testing as part of the safety case testing assessment

<"Clause Statement">

Explanation of the requirement

<Explanation Text>

Examples of documents/evidence that could be provided

<Example Text>

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H. Section [6.3 (GTR) / 8.3(UNR)] – Assessment of the safety case

71. Paragraph 6.3.1.4.(b) (GTR) / 8.3.1.4 (b) (UNR)

Pr. Undefined

GTR –

“The assessment shall review the manufacturer's safety case for robustness to verify that at least the following criteria have been met:

(b) The integrity level used for development, verification, and validation of the ADS and its features is appropriate to reduce the risk below the unreasonable risk threshold,”

UNR –

“The approval authority or its designated technical service shall review the manufacturer's safety case for robustness to verify that at least the following criteria have been met:

(b) The integrity level used for development, verification, and validation of the ADS and its features is appropriate to reduce the risk below the unreasonable risk threshold,”

Explanation of the requirement

The intent of this paragraph is to verify that the level of robustness and integrity documented in the safety case for the development, verification, and validation of the ADS and its features is appropriate to reduce the risk below the unreasonable risk threshold. This includes documenting the confidence/rigor of the tools, processes and testing used during the development, verification and validation stages in claims that are supported by arguments and evidence.

For example: In the ISO 26262 approach - Automotive Safety Integrity Level (ASIL):

- Risk is based on severity, exposure and likelihood

- ASIL is based on hazard severity, exposure and controllability.

In this case, we would be interested in verifying that the ASIL is appropriate for the hazards and risks that have been identified.

In this context, it would also apply to the tools, methods or tests results. The rationale for the acceptable level of accuracy, confidence or repeatability needs to be documented in claims and supported by evidence.

72. Paragraph 6.3.2 (GTR) / 8.3.2 (UNR)

Pr. Undefined

Methods to evaluate the concept of “sufficient” scenarios for fall-back response as part of safety case testing assessment

Procedure and data collection alignment with best practices for safety case testing assessment

Representativeness of the other road user for safety case testing assessment

<"Clause Statement">

Explanation of the requirement

<Explanation Text>

Examples of documents/evidence that could be provided

<Example Text>

73. Paragraph 6.3.2.2.3 (GTR) / 8.3.2.2.3 (UNR)

Pr. High

GTR –

“The assessment shall verify that the set of scenarios and situations resulting from the manufacturer's scenario generation and identification process is suitable for demonstrating the ADS safety case. This includes covering reasonably foreseeable situations and conditions

Commented [EJE29]: At this stage ,we do see this topic more suitable for guidance (it is already included there)

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that the ADS will encounter during its real-world operations. In particular the assessor shall verify that the set of scenarios and situations selected as evidence to support the ADS safety case includes:

- (a) Scenarios and situation in which the ADS needs to initiate a fall-back response (e.g., approaching the ODD limits), and.....”

UNR –

“The approval authority or its designated technical service shall verify that the set of scenarios and situations resulting from the manufacturer’s scenario generation and identification process is suitable for demonstrating the ADS safety case. This includes covering reasonably foreseeable situations and conditions that the ADS will encounter during its real-world operations. In particular, the approval authority or its designated technical service shall verify that the set of scenarios and situations selected as evidence to support the ADS safety case includes:

- (a) Scenarios and situation in which the ADS needs to initiate a fall-back response (e.g., approaching the ODD limits), and.....”

Explanation of the requirement

A fall-back response means “...a system-initiated deactivation procedure or an ADS-controlled procedure to place the vehicle in a mitigated risk condition (MRC);” and a system-initiated deactivation procedure as “...a procedure by which the ADS initiates the transfer of performance of the DDT from an ADSF-1 to a fallback user.” An ADS feature of type 1 (ADSF-1) means an ADS feature which includes an ADS fallback response requiring a fallback user, whereas an ADS feature of type 2 (ADSF-2) does not include an ADS fallback response requiring a fallback user.

In the context of this requirement ‘sufficient’ refers to two aspects:

- 1) The number of scenarios in which a fall-back response is initiated by the ADS feature;
- 2) The number of users participating in assessing the effectiveness of the user interaction aspect of the ADS fall-back process.

‘Sufficient’ in both 1) and 2) refers to the trust in the outcome of the tests that has been performed on the fall-back response. If either of them is not ‘sufficient’ then the evidence should be considered insufficient to support the claim.

For example, evaluating a large set of scenarios with a very limited number of participants provides little statistical power and does not support reliable inference. Conversely, evaluating a small subset of scenarios with a large and diverse participant sample may yield statistically meaningful results, depending on the proportion of the total set of relevant scenarios that is covered. The number and diversity of relevant scenarios are inherently dependent on the intended use case and its operational design domain. The choice of the number of participants also depends on what an ADS user needs to do / understand. In case of an ADSF-1 a fall-back user needs to do and understand different things than the passenger of a vehicle with an ADSF-2.

In statistics methods have been developed to assess whether the sample size is ‘sufficient’. These methods focus on the sample size in terms of number of participants. The manufacturer should provide the calculations that lead up to the choice of the number of participants and what are the assumptions used in the calculations.

With respect to the type and number of scenarios the manufacturer is expected to describe the reasoning behind their choice scenarios, why they claim they are representative and the justification for the overall number chosen.

The number of scenarios and/or of participants are only two aspects in the development of a methodologically sound setup in which the interaction between the vehicle and the user is tested. For this kind of testing there are well established practices that indicate what

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constitutes a methodologically sound setup.

74. Paragraph 6.3.2.4.1.4 (GTR) / 8.3.2.4.1.4 (UNR)

Pr. High

GTR –

“For the specific case of ADS interaction testing, the assessment shall:

- (a) Verify that the people involved are representative of the expected general population of ADS users and other road users where applicable..”

UNR –

“For the specific case of ADS interaction testing, the approval authority or its designated technical service shall:

- (a) Verify that the people involved are representative of the expected general population of ADS users and other road users where applicable.....”

Explanation of the requirement

The concept of representativeness aims to ensure that tests involving other road users provide credible, generalisable evidence about ADS behaviour in real traffic. The reference to “representative of the expected general population of ADS users and other road users” is intended to prevent safety claims being based on narrowly selected participants, atypical or overly compliant behaviour, or participants’ choices that do not reflect real-world diversity. It is important that other road users exhibit the full spectrum of normal and unusual behaviours and choices that the ADS might encounter so as to fully investigate the response of the ADS.

This concept is complemented by the notion of coverage. Coverage in this context can be considered as a measure of how well the testing “covers” the space that all relevant categories of other road users, interaction types, and traffic situations within the declared ODD are included in the safety case, such that no safety-relevant population or scenario is systematically excluded.

Together, coverage and representativeness ensure the validity of test results across the full range of situations likely to be encountered by the ADS.

In this context, representativeness does not mean a perfect demographic mirror of society. Instead, it means that the characteristics and behaviours of other road users involved in testing are diverse but sufficiently typical of those the ADS can reasonably be expected to encounter, such that conclusions drawn from the tests are valid.

Representativeness has three complementary dimensions:

- 1) Behavioural representativeness, which ensures behavioural patterns of other road users reflect real traffic behaviour (e.g., compliance and non-compliance with traffic rules, reaction times and decision-making variability, assertive, cautious, inattentive, or ambiguous behaviour, natural interaction dynamics (e.g., gap acceptance, yielding, hesitation).
- 2) Population representativeness, which ensures that the group of other road users is representative of the expected population (e.g., age range, physical characteristics relevant to perception (e.g., height), mobility characteristics (e.g., walking speed, cycling style), driving experience and style (for vehicle drivers).
- 3) ODD-specific relevance, which ensures that the representativeness is always relative to the declared ODD.

75. Paragraph 6.3.3 (GTR) / 8.3.3 (UNR)

Pr. High

GTR –

“At the option of the Contracting Party, confirmatory testing may be required to use one or

Deleted: Concept of “sufficient” scenarios for fall-back response as part of safety case testing assessment

Deleted: “For the specific case of ADS interaction testing, the assessment shall”
Verify that the people involved are representative of the expected general population of ADS users and other road users where applicable.....”

Deleted: Representativeness of the other road user for safety case testing assessment

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more test methods and pre-defined and repeatable test protocols to confirm that the evidence provided by the manufacturer accurately represents the ADS performance. The confirmatory tests shall cover a range of driving conditions representative of the ODD, including at least and as appropriate.”

UNR -

“Confirmatory testing conducted or required by the approval authority or its designated technical service shall use one or more test methods and predefined and repeatable test protocols to confirm that the evidence provided by the manufacturer accurately represents the ADS performance. The confirmatory tests shall cover a range of driving conditions representative of the ODD, including at least and as appropriate.”

Explanation of the requirement

The ADS assessment process under this Regulation is centred on the evaluation of a manufacturer’s safety case, where the confirmatory testing appears as the last assessment phase. The flowchart below illustrates a hypothetical ADS certification/approval process with the different steps of the assessment process and clarifies the stage at which confirmatory testing takes place. The flowchart is only provided as an explanatory visual aid and should not be intended as a prescriptive procedural requirement. The approach shown does not preclude different strategies, including the parallelization of some steps.

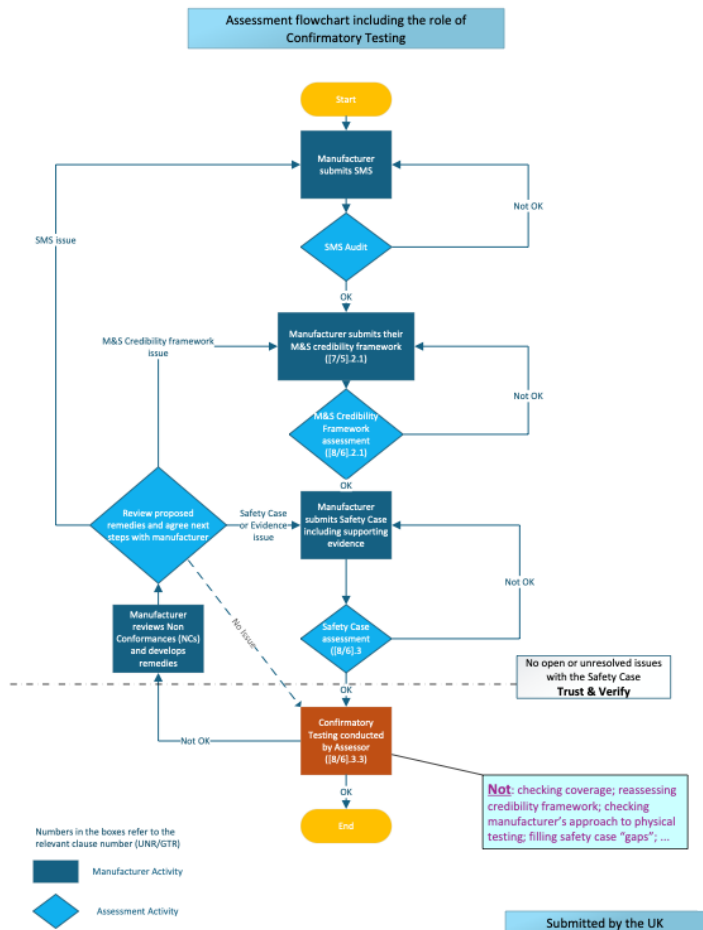
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Minimum list of scenarios to be included for confirmatory testing ¶
Potential mandatory nature of track testing for confirmatory purposes in certain jurisdictions ¶
Inclusion of unlikely/unusual ODD-relevant elements during real-world confirmatory testing ¶
Confirmatory test duration/coverage metrics for termination

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Confirmatory testing conducted by the assessor should be understood as a targeted and proportionate activity aimed at providing confidence in the credibility and internal consistency of the evidence supplied in support of the safety case, taking place after the latter has been assessed. The confirmatory testing is intended to verify selected evidence and is not meant to replicate in its entirety or replace the manufacturer's validation and verification campaign. The scope of confirmatory testing should therefore consist of representative samples of scenarios or operating conditions that are part of the safety case.

The assessor can accept, allow, or introduce variations to the tested scenarios or conditions, where this is considered necessary to verify the accuracy which the evidence is representative of the ADS performance. Such variations should be reasonable and compatible with the limitations/abilities of the toolchains¹ and allow comparison with the results provided by the

¹ It is expected that the assessment of the credibility and suitability of the testing toolchains takes place before the confirmatory testing to ensure the assessor is aware of any potential limitation and can make an informed assessment of the safety case.

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manufacturer or be assessable against the expected behaviour of the system. In this context, reasonable means that the ADS should be tested in scenarios/situations that are likely to occur in the real world, rather than in unrealistic situations that do not conform to the logic of the real world.

Variations may include, for example, adjustments to the initial conditions, parameter ranges, or environmental assumptions within the bounds or at the boundaries of the declared ODD but may also consider the behaviour at ODD exit or outside the ODD. Variations may also arise inherently from the nature of the testing environment. Considering the real-world confirmatory testing, the assessor is unlikely to be in a position to replicate the manufacturer's test method and protocols. The real-world confirmatory testing may be conducted on test routes different from those of the manufacturer, provided that the route selection related to the ODD of ADS. Similarly, while carrying out proving ground testing, it might not be possible to control all the variables, and there might be stochastic effects in the controlled variables. Whenever variations appear or are introduced, the purpose of the confirmatory testing is to verify the robustness of the ADS and the consistency of the results provided by the manufacturer.

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7. Guidance on the requirements of the UN Global Technical Regulation No. [XXX] and UN Regulation No. [YYY]

A. Guidance on Confirmatory testing

Pr.High

1. Minimum list of scenarios to be included for confirmatory testing
2. Inclusion of unlikely/unusual ODD-relevant elements during real-world confirmatory testing
3. Confirmatory test duration/coverage metrics for termination

B. Guidance on occurrences

Pr.High

1. (Additional information and details on the occurrences to be reported (e.g. Performance issues constituting an unreasonable risk to safety). In some way, this aspect is also related to the interpretation)

C. Guidance on Scenarios

Pr. Medium

1. Selection and allocation
2. Coverage and representativeness including combined coverage of virtual/track/real-world testing as part of the safety case testing assessment

D. Guidance on occurrences on short-term template

Pr. Medium

1. (e.g. examples about how to fill the template)

E. Guidance on occurrences on Template

Pr. Medium

1. (e.g. examples about how to fill the templates, ADS software version, in-service modification)

Commented [EJE31]: It should be periodic template

F. Guidance on SPIs

Pr. Medium

1. <Content>

G. Guidance on application Virtual testing credibility

Pr. Low

1. approaches for criticality,
2. competencies,
3. verification, and validation, including criteria to evaluate the correlation between test results and the manufacturer's data

H. Guidance for assessing the manufacturer's testing facilities/environment/capabilities

Pr. Low

1. <Content>

Drafting notes:

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I. Guidance for the Development of scenarios derived from ISMR activities

Pr. Low

1. <Content>

J. Guidance for assessment flowchart including role of Conformity Testing

Pr. Low

1. Document proposed by UK in previous Tokyo session ADS-08-12

8. Conclusions

[The ADS Regulations have opened the road to the market introduction and deployment of automated vehicles in the entire world. They define minimum safety requirements that vehicles need to fulfil and different validation methods to assess their performances. Being the first harmonised worldwide regulation(s) for ADS of automated vehicles, they introduce various elements of completely innovative character. In order to support ADS developers and Authorities in the application of the Regulation(s) and in order to ensure that related practices around the world may be as harmonized as possible, the ADS workshop in cooperation with the ADS IWG has initiated the process to provide an interpretation and guidance to some of the most innovative aspects of the legislation(s). The work has been carried out by the experts of these 2 groups, under the lead of the ADS Ambassadors. The result of this process is the present document. The parts of the Regulation(s) for which an interpretation and/or guidance, examples and references have been provided have been identified by the stakeholders involved in the process. In the future, the work will continue to include additional parts of the Regulation(s) as well as to strengthen and consolidate the parts dealt with in the present report in the light of the evidence that will be gathered by the application of the Regulation(s).]

Commented [Sec32]: Reference GRVA-WS09-04

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