

# 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 are highlighted in **turquoise**. These reflect preliminary thoughts. The draft text proposal 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.

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## 2. Proposal

### 1. Preamble

1.1. [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.

1.2. [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.]

### 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).][MK1]

### 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.][MK2]

### 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.][MK3]

## 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.][MK4]

## 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]

### A. Section [4.1 (UNR)] – Approval

#### 1. Paragraph XX (GTR) / XX(UNR)

*Pr.-Undefined*

(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">

*Explanation of the requirement*

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<Explanation Text>

2. **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).[ER5]

<"Clause Statement">

*Explanation of the requirement*

<Explanation Text>

3. **Paragraph XX (GTR) / XX(UNR)** *Pr.-Undefined*

(4.4) Competence of TAA / TS Personnel

<"Clause Statement">

*Explanation of the requirement*

<Explanation Text>

4. **Paragraph XX (GTR) / XX(UNR)** *Pr.-Undefined*

(4.5) Application of the peer review / mutual recognition provisions.

<"Clause Statement">

*Explanation of the requirement*

<Explanation Text>

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

5. **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 classified as nominal, critical and failure categories 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, a sensor or the vehicle 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 this does not make the situation critical, instead it is a noncompliance with the nominal requirements. 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 of situation, 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”.

#### 6. 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*

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 or the system in 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.

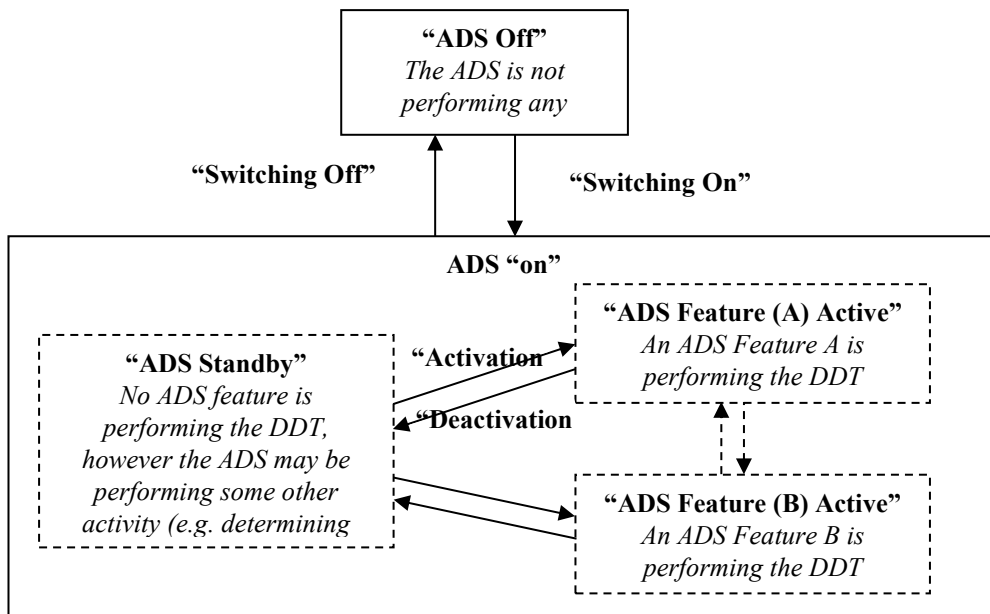
“(ADS feature) available” means the operational state of an ADS feature pursuant to the ADS verification that the ODD conditions of the feature have been met at a time prior to activation of the feature when it is not performing any part of the DDT.

“(ADS feature) Activation” means the act of changing the operational state of the ADS feature, from operational state of an 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 Standby.

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



7. **Paragraph 4.1.2.1 (GTR) / 6.1.2.1 (UNR)**

*Pr.-Medium*

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

*Explanation of the requirement*

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.

8. **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 the response for an ADSF-1 to be a fallback response to transfer control to the fallback user in the case of a priority vehicle interaction. 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.

9. **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.

**10. 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

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.

**11. 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”

*Explanation of the requirement*

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

**12. 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.

**13. 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.

**14. 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*

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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

15. Paragraph 4.1.4.4.2 (GTR) / 6.1.4.4.2 (UNR)

Pr.-Medium

“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”

*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.

16. 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 process” 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.

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

Pr.-Medium

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

<"Clause Statement">

*Explanation of the requirement*

<Explanation Text>

18. 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:

- (a) Anticipating the risks in the driving environment to reduce the likelihood of encountering a critical situation,
- (b) Adapting its speed in line with safety risks, and
- (c) 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

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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

19. **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?
20. **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 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.
21. **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.
22. **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>
23. **Paragraph XXXX (GTR) / XXXX (UNR)** *Pr.-Low*  
ODD Exit  
<"Clause Statement">  
*Explanation of the requirement*  
<Explanation Text>
24. **Paragraph XXXX (GTR) / XXXX (UNR)** *Pr.-Low*  
MRC  
<"Clause Statement">  
*Explanation of the requirement*  
<Explanation Text>

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

25. 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) potential roles of the user (e.g. availability of an ADS, current role(s) (e.g. fallback user) and current responsibilities of the user] / [The current ADS feature and the switching process between different feature[RB6]s / [The status of the current ADS feature (e.g., active, inactive, available] and the switching process between different features][RB7]**
- (2) **current role (e.g. fallback user) and current responsibilities of the user; potential roles of the user (e.g. availability of an ADS, current role(s) (e.g. fallback user) and current responsibilities of the user;**
- (23) **stages of the deactivation process**
- (34) **vehicle and ADS faults and consequent adapted performance,**
- (45) **warnings on attempts to use the controls that are disabled, suppressed or by other means made unavailable,**
- (56) **information supporting the building up of situation awareness prior to and during a transition from ADS,**
- (67) **alerts to the user prior to and during the ~~MRM~~MRC process,**
- (78) **approaches to ODD exits (pre-alerts to system-initiated transitions) and the estimated [time remaining to such exit][RB8][RB9]**

**Noticeable** means that information and signals ~~shall be perceptible (will attracting~~ the user’s attention **(by being, e.g., salient enough, loud enough, etc.)**

**Comprehensible and unambiguous** means **that the information is clear and 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 **state]justify in their safety case[RB10][RB11] why that 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.][RB12]**

26. 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 interpretation of this requirement depends on what is meant ‘by the user’.”....misuse and errors in operation by the user” is interpreted that 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 [MC13] of misuse of an ADSF-1 is ~~nodding off~~ [falling asleep / becoming drowsy] while the ADS is performing the DDT.

[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. [RB14]

[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.] [RB15]

27. Paragraph 5.3.2.10 (a) [JR16] (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

28. Paragraph 4.2.2.1.2 (GTR) / 6.2.2.1.2 (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 [RB17] [RB18]
- Indirect signal inputs (e.g., control inputs from devices outside the vehicle.) [RB19]

*The controls related to manual performance means the direct inputs to longitudinal and lateral vehicle control (accelerator pedal, brake pedal, parking brake actuator, clutch pedal where fitted, manual or automatic gear selector and steering wheel) as well as controls related to external lighting (indicator stalk, controls for headlight and rear light activation, external indication of ADS status or intent), horn activator and [hazard warning light switch].*

29. Paragraph 4.2.2.1.2 (GTR) / 6.2.2.1.2 (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[MC20][RB21]. 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.

30. **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.**

~~All of the controls addressed in Paragraph 4.2.2.1.2 (GTR) / 6.2.2.1.2 (UNR) shall be reactivated during the deactivation procedure as well as direct view to the outside environment, devices for indirect vision, indicators, warnings, and tell tales at a suitable time. The manufacturer should consider the sequence and timing of the reactivations of the various elements.~~

31. **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.[MC22][RB23] Means to suppress sudden and risky (lateral and/or longitudinal) movements should be adopted.

32. **Paragraph XX (GTR) / XX(UNR)** *Pr. Undefined*

Non ADS Related Warning[OC24]

<"Clause Statement">

*Explanation of the requirement*

<Explanation Text>

33. **Paragraph XX (GTR) / XX(UNR)** *Pr. Undefined*

[A consistent assessment of suppression “strategies”.][OC25]

<"Clause Statement">

*Explanation of the requirement*

<Explanation Text>

34. **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.**

35. 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 a 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 [MC26][RB27]** leading to an imminent fallback response,
- the **presence of faults [MC28][RB29]** 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 display of the information[RB30]**

36. 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.[RB31]

37. 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 given-specific driving situations (e.g., [when in a manoeuvre such as overtaking / when in a manoeuvre that would cause a collision risk][RB32]).

38. 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][RB33] in 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:][RB34][RB35]

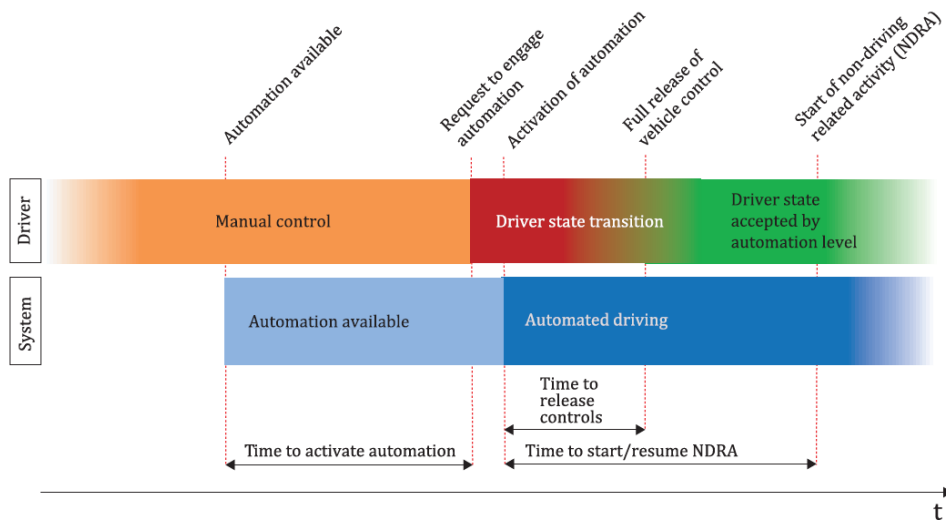


Figure 1 — Driver/system-initiated transition from manual to automated driving

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

- (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.

39. 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.

40. Paragraph 4.2.2.3.7 (GTR) / 6.2.2.3.7 (UNR) [RB36]  
High

Pr.

“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 [PE37][RB38] procedure [are depicted in / may refer to] the figures below from [ISO/PE39][RB40]/TR 21959-1:2020, Road vehicles — Human performance and state in the context of automated driving: Part 1: Common underlying concepts:

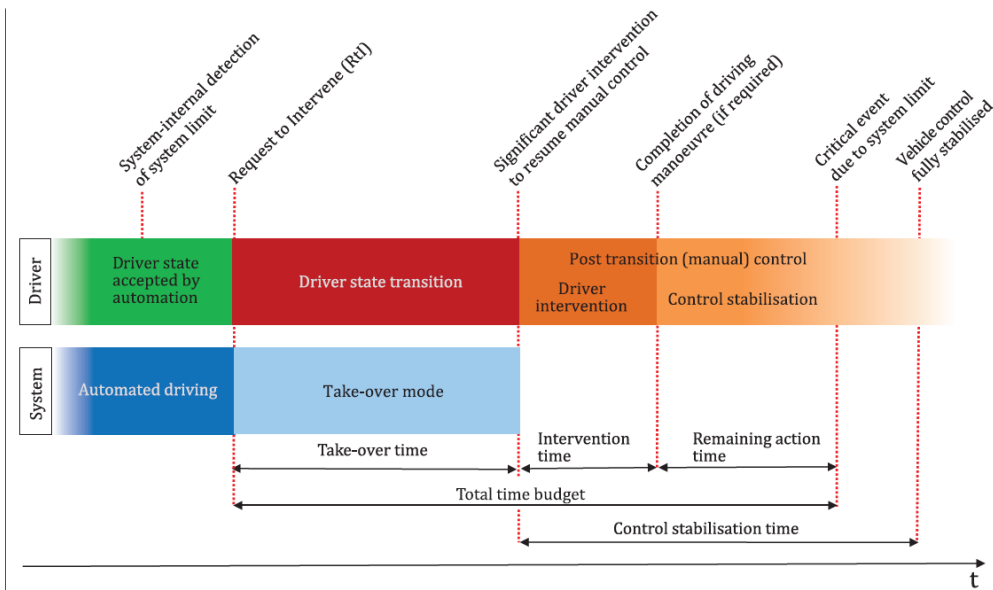


Figure 2 — System-initiated transition from automated to manual driving

[MC41][RB42]

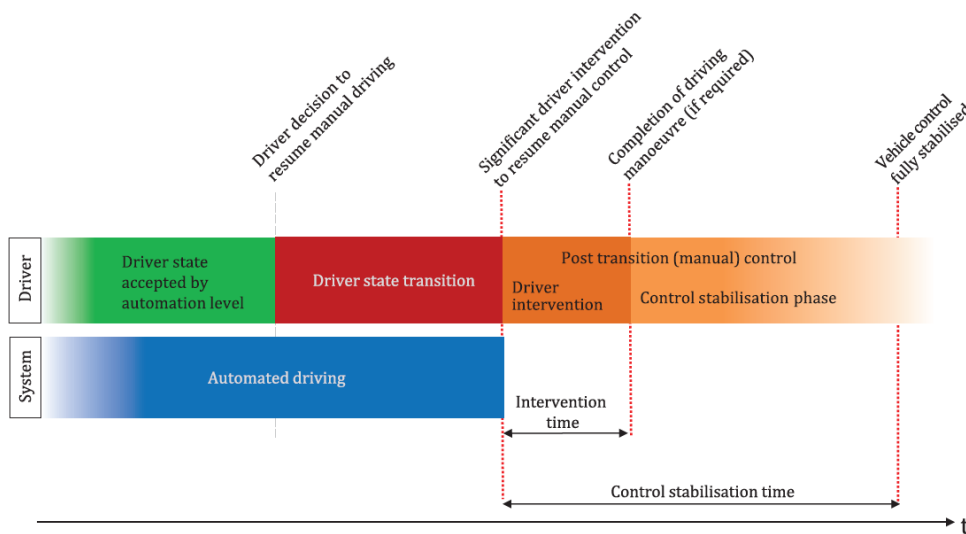


Figure 4 — Optional human-initiated transition of automated to manual driving

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

- (+) consider adherence to the sequence, and

- (2) justify the timings and how they are adapted to the situation and to individual capabilities and states.

41. 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 an immediate 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;

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[PE43][RB44];

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.

42. 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.”

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[PE45][RB46].” 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.

43. 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[MC47][RB48] / a language the user understands] and using simple terminology) and provided in a logical way.

44. Paragraph 4.3.4 (GTR) / 6.3.4. (UNR)

Pr. Low

“Other ADS requirements”[OC49][PE50]

*Explanation of the requirement*

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

D. Section [5.1.8 (GTR) / 7.1.8 (UNR)] – Management of post deployment safety[JR51]

45. Paragraph 5.1.8.2 (GTR) / 7.1.8.2 (UNR)

Pr. High

“The processes for ISMR shall demonstrate the capabilities:

---

..... (g) To report occurrences to the [relevant authority [ER52]]when they occur, and.....”

*Explanation of the requirement*

<Relevant Authority>

**46. Paragraph XXX (GTR) / XXX (UNR)**

*Pr. High*

**Clarification on [EDR trigger [ER53]]for critical occurrence**

<Clause statement>

*Explanation of the requirement*

<Explanation Text>

**47. Paragraph XXX (GTR) / XXX (UNR)**

*Pr. High*

**[Confidentiality and publication of information [ER54]]**

<Clause statement>

*Explanation of the requirement*

<Explanation Text>

**48. Paragraph XXX (GTR) / XXX (UNR)[ER55]**

*Pr.*

*High*

**Continuous Improvement**

<Clause statement>

*Explanation of the requirement*

<Explanation Text>

**E. Section [5.3(GTR) / 7.3 (UNR)] – Safety Case[JR56]**

**49. Paragraph 5.3.1.3 (GTR) / 7.3.1.3 (UNR)**

*Pr. Medium*

**Clarification of how ODD is defined & documentation format (Existing standards/standards in development could listed as possible references)**

<"Clause Statement">

*Explanation of the requirement*

<Explanation Text>

*Examples of documents/evidence that could be provided*

<Example Text>

**50. Paragraph 5.3.1.9 (GTR) / 7.3.1.9 (UNR)**

*Pr. Medium*

**Detail on what is considered an interaction – if it includes animals and what an interaction might look like.**

<"Clause Statement">

*Explanation of the requirement*

<Explanation Text>

*Examples of documents/evidence that could be provided*

<Example Text>

- 
51. **Paragraph 5.3.1.11 (GTR) / 7.3.1.11 (UNR)** *Pr. High*  
**Example of type of remote interaction**  
<"Clause Statement">  
*Explanation of the requirement*  
<Explanation Text>  
*Examples of documents/evidence that could be provided*  
<Example Text>
52. **Paragraph 5.3.1.14 (GTR) / 7.3.1.14 (UNR)** *Pr. Low*  
**Example of MRC or types of MRC[JR57]**  
<"Clause Statement">  
*Explanation of the requirement*  
<Explanation Text>  
*Examples of documents/evidence that could be provided*  
<Example Text>
53. **Paragraph 5.3.2.9 (GTR) / 7.3.2.9 (UNR)** *Pr. Medium*  
**Explanation of what is meant by “reasonably likely” conditions the ADS may encounter**  
<"Clause Statement">  
*Explanation of the requirement*  
<Explanation Text>  
*Examples of documents/evidence that could be provided*  
<Example Text>
54. **Paragraph 5.3.2.10 (GTR) / 7.3.2.10 (UNR)** *Pr. Medium*  
**Description of misuse/abuse or measures that could be taken[JR58]**  
<"Clause Statement">  
*Explanation of the requirement*  
<Explanation Text>  
*Examples of documents/evidence that could be provided*  
<Example Text>
55. **Paragraph 5.3.3.1 (GTR) / 7.3.3.1 (UNR)** *Pr. High*  
**Example of Claim, Argument & Evidence**  
<"Clause Statement">  
*Explanation of the requirement*  
<Explanation Text>  
*Examples of documents/evidence that could be provided*  
<Example Text>
56. **Paragraph 5.3.3.9 (GTR) / 7.3.3.9 (UNR)** *Pr. Low*  
**Example/extent of non-testing evidence to augment example in paragraph.**  
<"Clause Statement">

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*Explanation of the requirement*

<Explanation Text>

*Examples of documents/evidence that could be provided*

<Example Text>

**F. Section [6.2 ([JR59]GTR) / 8.2 (UNR)] – Assessment of Test Environment**

**57. 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 [ER60]

<"Clause Statement">

*Explanation of the requirement*

<Explanation Text>

*Examples of documents/evidence that could be provided*

<Example Text>

**58. 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 [ER61]

<"Clause Statement">

*Explanation of the requirement*

<Explanation Text>

*Examples of documents/evidence that could be provided*

<Example Text>

**59. 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 [ER62]

<"Clause Statement">

*Explanation of the requirement*

<Explanation Text>

*Examples of documents/evidence that could be provided*

<Example Text>

**60. 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 [ER63]

<"Clause Statement">

*Explanation of the requirement*

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<Explanation Text>

*Examples of documents/evidence that could be provided*

<Example Text>

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

### **61. 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[ER64]

<"Clause Statement">

*Explanation of the requirement*

<Explanation Text>

*Examples of documents/evidence that could be provided*

<Example Text>

### **62. Paragraph 6.3.2.2.3 (GTR) / 8.3.2.2.3 (UNR)**

*Pr. High*

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

*Explanation of the requirement*

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

### **63. Paragraph 6.3.2.4.1.4 (GTR) / 8.3.2.4.1.4 (UNR)**

*Pr. High*

“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,....”

*Explanation of the requirement*

Representativeness of the other road user for safety case testing assessment

### **64. Paragraph 6.3.3 (GTR) / 8.3.3 (UNR)**

*Pr. High*

“Confirmatory Testing”

*Explanation of the requirement*

Scope of Confirmatory testing

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 [ER65]

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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 [ER66] Template *Pr. Medium*

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

### 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>

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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).][MK67]