

Canada's comments to amend the interim FRAV submission 33-04 to GRVA/WP.29

1.4.6 For example, a decision to drive from home to a workplace involves a strategic assessment of the current conditions, the risks involved in driving under those conditions, and the probability for arriving at work on time. While driving, the driver makes tactical decisions based on conditions encountered along the way such as to change lanes or turn onto another street. In changing lanes, the driver makes a tactical assessment that the lane change is feasible and actuates the direction indicators before operationally steering the vehicle while maintaining an appropriate speed, often with ~~micro adjustments~~ **continuous adjustments** in response to changes in the behaviour of other vehicles relevant to executing the change of lane.

Justification

Not always micro. Rather than micro-corrections, this should say "continuous adjustments"

1.4.7. These behavioural levels relate to perception, information processing, and decision making under uncertainty.¹ Driving can be considered an exercise in risk management within the context of achieving strategic goals. Drivers assess and respond in real time to perceived risks in the road environment **and the behaviours of other road users.**

Justification

Not only does the driver respond to perceived risks in the road environment they also respond to other behaviours of other road users such as another road user signalling that they want to change lanes for example.

1.4.8. The real-time tactical and operational functions required to operate a vehicle in on-road traffic are collectively known as the Dynamic Driving Task (DDT) **which involves longitudinal and lateral control and the Object Event Detection and Response (OEDR).** As noted above, these functions may be performed within the context of strategic goals, but the DDT itself excludes such strategic functions. These functions may overlap or operate in combination such as in a tactical decision in response to road conditions to deviate from the original strategy to follow a particular route.

Justification

These functions should be described in the beginning of the document.

¹ Michon, J.A., 1979 (update 2008). "Dealing with Danger", Summary Report of the Workshop on Physiological and Psychological Factors in Performance under Hazardous Conditions with Special Reference to Road Traffic Accidents, Gieten, Netherlands, May 23-25, 1978.

1.5.2. Unlike human drivers broadly licensed to operate a vehicle on all roadways under all conditions, ADS may be designed for specific purposes and to operate under specific conditions **and may not be capable of extrapolating appropriate responses to unexpected events.**

Justification

Human drivers would have the ability to respond to unexpected events such as responding to a stop sign obstructed by a tree. However, the ADS may not be able to do the same. We should state this here.

- 1.5.5. Roles may change during the course of a trip. For example, ~~in some configurations,~~ when a driver activates ~~the~~ **a level 3** ADS while the vehicle is moving, the ADS becomes the sole vehicle operator (i.e., performing the DDT) and the driver shifts to the role of fallback user. For safety reasons, this fallback-user role entails an obligation to remain receptive and responsive to ADS requests to assume control over the vehicle (i.e., to return to the role of driver).

Justification

This would only apply to Level 3 ADS. A level 4 ADS could be activated during a trip but the driver is not obligated to remain responsive.²

- 1.5.6. The requirements recommended in this document address misuse prevention and the safety of user interactions such as transitions of vehicle control; ~~however, the fallback-user role also suggests traffic laws to codify obligations of fallback users to maintain their readiness to drive the vehicle during a trip.~~

Justification

This is out of scope for FRAV, it falls in the scope of WP1 and individual jurisdictions. should be removed.

- 1.5.8. The ADS requirements must address the diversity of driving conditions **and behaviours** that may arise singly and in combination within the ODD.

Justification

The ADS will need to adapt to different behaviours depending on the jurisdiction where it operates. For example, the distance required for following an emergency vehicle may differ depending on the jurisdiction.

- 1.5.9. **In addition, the requirements must address ADS that may be designed to operate in more than one ODD. As long as the ADS safely performs the DDT within each ODD, there is no reason to limit the definition of sets of ADS capabilities designed to operate the vehicle under separate sets of ODD conditions.**

Justification

This paragraph seems to indicate that the ADS can operate in different ODDs but that it is not required to limit the capabilities under separate ODDs? Are we defining based on ADS capabilities tied to an ODD or ODDs tied to ADS capabilities? A single ODD may be sufficient? Could this be clarified please.

² <https://unece.org/DAM/trans/main/wp29/wp29resolutions/ECE-TRANS-WP29-1140e.pdf>

- 1.5.10. ~~Driver performance of the DDT is based on human physical, sensory, and cognitive capabilities. ADS performance of the DDT is based on hardware and software. Therefore, the definition of DDT as applied to an ADS must be understood in these terms.~~

Justification

We would recommend removing this paragraph. Should ADS performance not be based on the system's physical, sensory and cognitive capabilities as well? The underlying hardware and software provides this capability but the integration is as, if not more, important than each separate part. I.e. It does not matter what software or hardware the ADS has, only that it can perform the tasks.

1.5.11.1 Sensing and perception

ADS sensing and perception includes monitoring the driving environment via object and event detection, recognition, and classification. These functions include perceiving other vehicles and road users, the roadway and its fixtures, objects in the vehicle's driving environment, and relevant environmental conditions, including sensing ODD boundaries, if any, of the ADS feature and positional awareness relative to driving conditions. **Level 4 and 5 ADS systems should also sense and perceive additional aspects of vehicle performance related to the driving task (ie. worn tyres, vehicle damage, vehicle load/aerodynamic imbalances)**

Justification

While for Level 3 systems the DDT fallback user has some responsibility for detecting issues with the vehicle, the onus is on the system for Level 4 and 5 systems³

1.5.11.3. Control

Control refers to ~~object and event response execution via~~ lateral and/or longitudinal motion control and enhancing vehicle conspicuity via lighting and signalling.

Justification

Removing the text broadens the definition and encompasses additional possible cases.

1.6. Automated Driving Systems

- 1.6.1. Based on the above, ADS need to be ~~understood~~ **described** in terms that cover the DDT (tactical and operational functions required to operate the vehicle in traffic) and the ODD (conditions under which such ADS capabilities are made available to a user).

Justification

Understanding is very subjective, perhaps a better word is described. Intent of this paragraph is not clear.

- 1.6.2. ~~An ADS consists of hardware and software that are collectively capable of performing the entire DDT on a sustained basis within one or more ODD.~~

³ <https://unece.org/DAM/trans/main/wp29/wp29resolutions/ECE-TRANS-WP29-1140e.pdf>

Justification

The definition of ADS (Section 3) is almost the same as this paragraph; we would recommend removing this paragraph.

- 1.6.3. Driving automation systems that ~~require human support to fulfil aspects of~~ **cannot fully perform** the DDT fall below the level of an ADS. **ADS systems of Level 3 may require a human driver for DDT-fallback.**

Justification

Wording makes it seem like the DDT can be split. Add a bit of clarity between DDT and DDT-fallback.

- 1.7. ADS functions
 - 1.7.1. ~~ADS integrate subsets of hardware and software (i.e., functions) designed to perform aspects of the DDT.~~

Justification

The definition of ADS (Section 3) is almost the same as this paragraph; we would recommend removing this text.

- ~~1.7.2. ADS functions, in general, correspond to system-level capabilities integrated into the ADS design.~~

Justification

Suggest remove, there is a definition of ADS function (Section 3) which seems clearer than 1.7.2 and 1.7.3.

(Based on 1.7.1 would it not be a sub-system level as it is a subset of hardware/software?)

- ~~1.7.3. A function enables the ADS to perform one or more **aspects** **elements** of the DDT.~~

Justification

Suggest remove, there is a definition of ADS function (Section 3) which seems clearer than 1.7.2 and 1.7.3.

(We used aspects in 1.7.1, are we referencing the same thing or two different things? Can we clarify this please.)

- 1.7.4. In addition to DDT-specific functions, an ADS function may contribute to ensuring the safe operational state of the ADS and/or preventing use when the ADS is not in a safe operational state **or if the ADS is outside its ODD.**

Justification

An ADS function should not allow the ADS to operate outside its ODD

- 1.7.6. Functions represent the **first level of safety** that an ADS must fulfil. These functions correspond to essential capabilities without which an ADS cannot be deemed safe for use in traffic.

Justification

Can there be clarification provided here on whether there are multiple levels of safety. Unclear what concept is being brought forward.

- ~~1.7.7. However, functions that enable performance of the DDT and functions that ensure safe use, including the safety of user interactions, involve distinctly different objectives and requirements.~~

Justification

We would recommend removing this text. This paragraph causes confusion. We are introducing a classification for two different types of functions (performance and safe use) but in 1.7.6 we state all functions are essential for safe use.

- 1.7.8. Safe ADS performance of the DDT

- ~~1.7.8.1. Requirements to ensure safe ADS performance of the DDT address the functional and behavioural objectives described by the WP.29 Framework Document on Automated Vehicles: ADS operation of the vehicle shall not cause crashes or disrupt traffic and ADS shall avoid crashes where preventable.~~

Justification

Suggest this paragraph be removed – Canada would propose to add text to the Scope to reference the WP29 framework on Automated Vehicles and its applicability to this document.

- 1.7.8.3. These recommendations intentionally omit specifications for individual DDT functions. As noted above, performance of the DDT is dependent on traffic conditions where such functions cannot be limited to representative specifications. For example, a representative crash test at 56 kph ensures safety at lower speeds. This approach cannot be applied to driving where safety involves real time tactical and operational adaptation to dynamic road conditions. Tactical and operational functions are interdependent where the complexity of their interactions needs to be assessed under diverse traffic conditions.

Justification

While this example makes intuitive sense, the claim is wrong. A vehicle built to optimally protect occupants in 56kph collisions might be too stiff and not perform ideally at lower speeds. We would support the revision proposed here by SAE.

- ~~1.7.8.4. By ensuring that an ADS will be subjected to traffic scenarios covering its ODD, the assessment of the behavioural competencies demonstrated by the ADS under those scenarios verifies the capability of the ADS to perform the entire DDT necessary to navigate its ODD.~~

Justification

This is in the scope of VMAD. Suggest it be removed. Verifying the capability is complex and may not be achieved through just certain traffic scenarios, this seems to simplify too much and would prefer leaving to VMAD.

- 1.7.9.2. Trust often determines automation usage. Operators may not use a reliable automated system if they believe it to be untrustworthy. Conversely, they may continue to rely on automation even when it malfunctions.⁴ ADS should be designed to foster a level of trust that is aligned with their capabilities and limitations to ensure proper use.

Justification

As-worded, it seems to be outside the scope of ADS safety requirements FRAV is tasked with. It is much more relevant to ADAS systems. ADS systems in scope are L3+ where the driver can be eyes off the road. The paragraph should be geared towards level 3+ where the system can only be turned on when it is inside its ODD.

- 1.7.9.3. These **recommendations** address user understanding of the ADS configuration, intended uses, and limitations on use, simplicity in defining and communicating user roles and responsibilities, clarity and commonality across ADS controls, requests, and feedback, and both misuse prevention as well as safeguards in the event of misuse.

Justification

It would be helpful to provide clarity on the recommendations that are mentioned here.

- 1.7.9.4. The **recommendations** encourage Safety Management Systems that integrate Human-Centred Design Processes to ensure safe interactions between ADS and their users.

Justification

It would be helpful to provide clarity on the recommendations that are mentioned here.

- 1.7.9.5. These human-centred processes should include analyses by qualified personnel of user needs and risk, setting safety and usability objectives, specifying user requirements and ensuring user understanding and context to produce design solutions that meet the requirements.

Justification

We would recommend combining paragraphs 1.7.9.4 and 1.7.9.5 as they complement each other.

- 1.7.9.6. ADS should be evaluated, particularly under real-world testing on real users (i.e., not the people who are developing the products).**
- 1.7.9.7. ADS performance should be monitored in the field and this information should be used to set future design targets and evaluate designs against these requirements.**

Justification

This seems like the scope of VMAD rather than FRAV since we are talking about evaluation and in-use monitoring. Unless we can make more specific recommendations or requirements would suggest to remove

⁴ Raja Parasumaran and Victor Riley. Humans and Automation: Use, Misuse, Disuse, Abuse. Human Factors, 1997, 39(2), 230-253.

- 1.8.5. This document recommends a feature-based assessment of ADS. In cases where an ADS has more than one feature (i.e., is designed to operate in more than one ODD), each feature should be assessed to ensure that the ADS provides the functions necessary for performance of the entire DDT within ~~the feature's ODD~~ ~~of each feature~~.

Justification

As worded it could be misleading when there are multiple features and multiple ODDs. Suggest rewording this to "the feature's ODD."

3. Terms and Definitions

- 3.22. "*Transition of control (TOC)*" means a procedure by which the ADS hands over dynamic control of the vehicle to the fallback user such that the fallback user is given the role of driver upon completion.

Justification

Would suggest a review, Transition of Control could be the transition between the human driver and the ADS or from one ADS feature to another?

4. ADS Documentation

This section concerns the availability and/or provision of information regarding an ADS and/or ADS vehicle. Unless otherwise specified, "documentation" should be understood as agnostic regarding the form or format for substantiation of such information.

Justification

Is the documentation intended for the end user or for a type-approval – compliance verification entity? Documentation is important and relevant to regulation but how does it fit into guidelines and functional requirements? This could be useful at a later stage when moving towards a regulation or guidance. Suggest to remove section or reword for this document.

- 4.1. The manufacturer shall provide written information on the ADS configuration and the intended uses and limitations on the use of its feature(s).

Justification

"Written" should be a minimum - we know owners manuals are not the most effective way to inform users about a product. For example, In-vehicle displays can be used to show interactive "how to" multimedia tutorials. The same comment applies to other instances of "written" in this section. Is this for an owner's manuals or part of a Type Approval process? This should be clarified for the reader.

5. ADS Safety Requirements

~~The following subsections recommend criteria for validating the safety of ADS and/or ADS vehicles.~~

- ~~5.3. Annex A provides a recommended approach to scenario generation and to the establishment of ADS behavioural competencies to be~~

~~demonstrated under these scenarios. Each scenario is associated with one or more behavioural competencies.~~

Justification

Suggest remove paragraph, this appears to be within VMAD scope.

- 5.4. ~~The ODD-based approach to scenario generation provides analytical methods to ensure that the scenarios cover the ODD of the ADS feature(s). These scenarios address nominal, critical, and failure situations to enable assessments in accordance with the WP.29 Framework Document on Automated Vehicles (FDAV)⁵.~~

Justification

Suggest remove paragraph, it appears to be in VMAD scope.

(Last sentence should be removed, addressed in proposed additions to Scope - See Canada's proposed list of changes to Intro Scope and Definition)

- 5.6. ~~Compliance with the recommended requirements under Subsections A, B, and C is determined by verifying that the ADS demonstrates the behavioural competencies associated with the scenarios relevant to the ODD of its features.~~

Justification

Suggest remove paragraph, it appears to be in VMAD scope.

- 5.7. These requirements shall be applied in the definition of behavioural competencies to be demonstrated under traffic scenarios.

Justification

Request clarification on this paragraph, do not understand intent, perhaps in VMAD scope as well.

- 5.8. ADS Performance of the DDT under Nominal Traffic Scenarios
- 5.8.1. ~~The following recommendations address the Framework document on automated/autonomous vehicles (ECE/TRANS/WP.29/2019/34/Rev.2) guidance that ADS vehicles shall not cause traffic accidents or disrupt traffic.~~

Justification

Suggest remove, Framework document reference suggested to be added in Scope (See Canada's proposed list of changes to Intro Scope and Definition)

- 5.8.2. Compliance with this broad objective can be verified by subjecting the ADS and/or ADS vehicle to nominal traffic scenarios representing usual and expected traffic conditions and behaviours. By minimizing risk factors outside the ADS nominal performance of the DDT, the impact of the ADS driving behaviour on other road users and the flow of traffic can be isolated.

Justification

Suggest remove paragraph, it appears to be in VMAD scope.

⁵ ECE/TRANS/WP.29/2019/34/Rev.2 as amended

5.8.4.7. The ADS shall detect objects in and around its path of travel that exceed a **minimum size**.

Justification

We should specify or reword, the minimum size could be taken as a number of different things. What about obstacles such as potholes or speed bumps? Would these be considered objects? This should be clarified.

5.8.4.8. The ADS shall recognize objects as static or mobile.

Justification

Can we clarify what is intended here? Some objects could fall in both categories (ie. A stopped car or parked car)

5.8.4.9. The ADS shall recognize markings and signals used to indicate priority vehicles **and classify these vehicles** within the ODD of its feature(s).

~~5.8.4.10. The ADS shall classify priority vehicles within the ODD of its feature(s) in accordance with the relevant traffic law(s).~~

Justification

Suggest combining 5.8.4.9 and 5.8.4.10

(It looks like this section does not discuss acting based on the detection of these vehicles)

5.8.5.6. **The ADS shall adapt its driving behaviour to the surrounding traffic conditions (e.g., by avoiding disruption to the flow of traffic) while respecting the speed limit.**

Justification

This could be interpreted as speeding to not disrupt traffic flow? 5.8.5.4 states safe speed not speed limit (although both should be obeyed). 5.8.5.10 allows not respecting the law if it enhances the safety, stating speed limit here removes ambiguity.

~~5.8.5.8. The ADS shall comply with traffic rules and regulations relevant to its performance of the DDT under each traffic scenario within the ODD of its features. See Annex A for recommendations on converting ODD-specific traffic rules into elements applicable to scenario generation and the establishment of behavioural competencies.~~

Justification

Similar to 5.8.5.10, suggest to remove 5.8.5.8

5.8.5.10. ADS shall comply with the traffic laws, **rules and regulations** in nominal conditions, except when in specific circumstances or when necessary to enhance the safety of the vehicle's occupants and/or other road users.

Justification

This section is about Nominal Traffic Scenarios, which implies nominal conditions. Add elements missing from removal of 5.8.5.8. Would suggest putting this paragraph as the first under 5.8.5. This may need further discussions with WP1 regarding traffic laws.

5.9. ADS Performance of the DDT under Critical Traffic Scenarios

- 5.9.1. ~~The following recommendations address the Framework document on automated/autonomous vehicles (ECE/TRANS/WP.29/2019/34/Rev.2) guidance that ADS vehicles shall avoid collisions where preventable.~~

Justification

Suggest remove, Framework document reference suggested to be added in Scope (See Canada's proposed list of changes to Intro Scope and Definition)

- 5.9.2. ~~Compliance with this broad objective can be verified by subjecting the ADS and/or ADS vehicle to critical traffic scenarios representing unusual or unexpected traffic conditions and/or object behaviours that elevate road safety risks. By introducing foreseeable external risk factors into scenarios, the capability of the ADS to manage safety critical events that may arise within its ODD can be assessed.~~

Justification

Suggest remove paragraph, it appears to be in VMAD scope.

- 5.9.3. This section recommends functional and behavioural requirements for assessing the ADS performance of the DDT under critical ~~driving conditions~~ **traffic scenarios**.

Justification

Consistency with section title

- 5.9.4. The ADS shall avoid collisions with safety-relevant objects where possible.
- 5.9.5. In the event of a collision, the ADS shall stop the vehicle and deactivate **as well as engage a parking brake**.

Justification

Some form of standstill management function will be needed; a function that could be performed by the vehicle or ADS. We don't want the vehicle rolling away after it stops.

- 5.9.6 The ADS shall avoid disruption to flow of traffic where possible.**
- 5.9.10 The ADS shall avoid non-compliance with the traffic laws, rules and regulations where possible.**
- 5.9.11 The ADS shall attempt to minimize collision severity.**

Justification

While for critical traffic scenarios, this may not be possible, the ADS should still attempt to respect these points.

5.10. ADS Performance of the DDT under System Failure Scenarios

5.10.1 ~~The following recommendations address the Framework document on automated/autonomous vehicles (ECE/TRANS/WP.29/2019/34/Rev.2) guidance regarding the assurance of system safety and responses to system failures that compromise the capability of the ADS to perform the entire DDT.~~

Justification

Suggest remove. Framework document reference suggested to be added in Scope (See Canada's proposed list of changes to Intro Scope and Definition)

5.10.2. The ADS shall detect faults, malfunctions, and abnormalities that compromise its capability to perform the entire DDT within the ODD of its feature(s) per the manufacturer's documentation under Section ~~4~~ **4. Level 4 and 5 ADS systems shall detect abnormal vehicle performance related to the driving task (ie. worn tyres, vehicle damage, vehicle load/aerodynamic imbalances).**

Justification

Consistency with current section numbering. Add distinction between L3 and L4/5 systems with DDT-fallback performance and detection of vehicle issues.

5.10.3. The ADS may continue to operate in the presence of [faults/failures] **or abnormal vehicle performance** that do not prevent that ADS from fulfilling the safety requirements applicable to the ADS. **The ADS should signal faults.**

Justification

It should be required to signal faults. Should also consider vehicle performance in making this decision.

5.10.4 In the event the ADS is unable to continue to operate, it shall either attempt to transition control to the fallback user or achieve a minimal risk condition. If the fallback user does not respond, it shall achieve a minimal risk condition.

Justification

What does it do when it detects a fault where the ADS can't continue to operate safely? It should attempt to transition or achieve MRC

5.11. Interactions between Users of ADS Vehicles and the ADS

Justification

Suggest review of section 5.11 keeping in mind the document aims at level 3/4/5 systems. Some wording seems to be applicable to Level 2 systems but not L3/4/5.

5.11.3.1.3 The interaction should be simplified:

- (a)
- (b) [Limit the number of potential transitions]
- (c) [Limit the number of settings]

(d) [Limit the number of different interaction modes]

Justification

Limiting roles, transitions etc is very important throughout this section but what does "limit" mean? Finite? That still could be a confusingly large number of roles. Any chance we can come up with a number – 2 or 3 max?

~~5.12.1.1. The ADS shall detect malfunctions and abnormalities that compromise its capability to perform the entire DDT as provided by the manufacturer under Section IV 4.~~

Justification

Suggest removal, this is already stated in 5.10.2 (For consistency with the document section numbering, we would recommend using the number 4.)

~~5.12.1.2. The ADS shall perform self-diagnosis of system integrity in accordance with the manufacturer documentation provided under Section IV 4.~~

Justification

Suggest removal, this is stated in 5.10.2, could add missing elements that section, if any. (For consistency with the document section numbering, we would recommend using the number 4.)

5.12.1.3. The ADS shall be accessible for the purposes of maintenance and repair to authorized persons.

Justification

Accessible is very broad and subjective, should be refined more as it could lead to many different conclusions. Repairs can be an issue for current ADAS, for example, sensors may need to be re-calibrated after repairs, OEM approved parts may be needed (e.g., windshields) to ensure performance. Additional clarity is requested for this paragraph

5.12.1.4. The ADS shall be designed to protect against unauthorized access to and modification of the ADS functions.

Justification

As above, this should be further clarified. It may also fall in the scope of Cybersecurity/OTA group.

~~5.12.1.5. The ADS shall prohibit activation of an ADS feature in the presence of a fault in an ADS function that compromises the ADS capability to perform the entire DDT within the ODD of the feature.~~

Justification

Suggest removal, this is stated in 5.10.2, could add missing elements that section, if any.

~~5.12.1.6. In response to a fault, the ADS may limit the ODD to enable activation and use of a feature impacted by the fault provided that the ADS continues to provide the functions necessary to perform the entire DDT within the limited ODD.~~

Justification

Suggest removal, this is stated in 5.10.3, could add missing elements that section, if any.

- 5.12.1.7. Remote **and/or physical** termination of the availability of the ADS or its feature(s) to the user by an authorized entity shall be possible in ADS vehicles equipped with **wireless connectivity** enabling access to the ADS (e.g., over the air software update capability).

Justification

Should this not be available at a dealer service centre as well, why limit to wireless? Wireless may be in scope of Cybersecurity/OTA, suggest removal

- 5.12.1.8. ADS safety shall be ensured in the event of discontinued production, support, and/or maintenance. **An entity should always remain responsible for the ADS. In the event that no entity retains responsibility for the ADS, the system should be decommissioned.**

Justification

Canada recommends adding that an entity should always remain responsible for support of the ADS. In the event that no responsible entity is available the ADS should be deactivated permanently. A responsible entity could be a manufacturer or a third party who agrees to facilitate maintenance.

- ~~5.12.1.9. Pursuant to vehicle damage, ADS reactivation shall not be possible until the safe operational state of the ADS has been verified.~~

Justification

Suggest removal, and integration in 5.10.2 due to similarities in concept.

6. Appendices

Justification

This section (6 A, B, C) appears to be incomplete and should be re-worked or removed.

A.ODD Descriptions for ADS Features

This appendix provides ~~mandatory~~ guidelines for the documentation of ODD conditions under which an ADS is designed to operate. These guidelines promote consistency across manufacturer descriptions of each ODD to facilitate use of this information in ADS assessments.

Justification

Guidelines are not mandatory, we would recommend removing this word.

ODD Documentation

1. To the extent provided, the documentation shall use the terms and measurement units provided in the Compendium of ODD Conditions.
2. The manufacturer may describe additional conditions where not provided for in the Compendium of ODD Conditions.
3. Each ODD condition and/or boundary shall be defined in measurable and/or verifiable terms.

Compendium of ODD Conditions

- ~~4. Rain means water droplets of 0.5 mm or greater.~~

~~2. *Rainfall rate* means the intensity of rain falling per hour assuming constant intensity during this period. The rainfall rate shall be specified in cm/hour.~~

Justification

This section does not seem to be fleshed out. Do we need to have a compendium? Manufacturers may have various different metrics or combination of metrics to determine ODD limits.

C. Material to be Included in the Owner's Manual

This appendix provides a list of information that shall be provided at a minimum in the vehicle owner's manual **and imbedded multimedia tutorial**.

Justification

Written owner's manuals are proven to be less effective than other means to inform users. This should recommend making imbedded multimedia tutorials to explain complex ADS functions.

1. An operational description of ADS' (features) capabilities and limitations (the information should also refer to specific scenarios).
2. A description of the roles and responsibility of driver/user and ADS when an ADS (feature) is on/off.
3. A description on the permitted transitions of roles and the procedure for those transitions.
4. A general overview of **Non-Driving Related Activities (NDRA)** allowed when an ADS feature is active.

Justification

Does this refer to non-Driving Related Activities? Should spell out instead of only providing an acronym here

7. Annexes

A. Approach to Derive Verifiable Performance
