Proposal to amend the draft FRAV interim submission to GRVA/WP.29

Modifications to the existing text are marked in **bold** for new or ~~strikethrough~~ for deleted characters.

Proposal #1

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~~ **vehicles** shall not cause **any traffic accidents resulting in injury or death that are reasonably** ~~crashes or disrupt traffic and ADS shall avoid crashes where~~ **foreseeable and** preventable.

Justification

Japan proposes to revise the sentence here to be more exactly consistent with the description in the framework document (para 2 in the section of "Safety Vision").

Also, FYI: UNR157

5. System Safety and Fail-safe Response
5.1. General Requirements
5.1.1. The activated system shall perform the DDT shall manage all situations including failures, and shall be free of unreasonable risks for the vehicle occupants or any other road users.
The activated system shall not cause any collisions that are reasonably foreseeable and preventable. If a collision can be safely avoided without causing another one, it shall be avoided.

Proposal #2

1.7.8.2. The safety benefit from ADS is achieved when ADS performance is safer than conventional human driver performance. From this perspective, in general, the safety level of ADS performance shall be equal to or higher than the safety level of careful and competent human driver performance.

Justification

Safety level concept is essential for further discussion about detail pass/fail criterion. Japan thinks that ADS should be equal to or safer than human driver with competence and care in genaral. On the base of this concept, we can decide further detail requirements.

In addition, a recent survey* shows that 95% of traffic accidents are caused by driver's traffic violations, which implies that most of the traffic accidents can be avoided if ADS performance is equal to or safer than a human driver who is careful and competent and thus does not violate traffic rules.

*Cabinet Office, Government of Japan: White Paper on Traffic Safety in Japan, 2022

FYI, this concept is similar to UNR 157.

Ref. UNR 157

5. System Safety and Fail-safe Response
5.1. General Requirements
5.1.1.1. The ALKS shall respond whilst active to any collision which requires a response according to national traffic rules (e.g. bringing the vehicle to standstill) and which could be expected to be recognised by a competent and careful human driver. In the case of such a collision and without prejudice to paragraph 5.4.4.1.1., a transition demand shall be given, unless one is already being given.

5.2. Dynamic Driving Task
5.2.7. For conditions not specified in paragraphs 5.2.4., 5.2.5. or its subparagraphs, the performance of the system shall be ensured at least to the level at which a competent and careful human driver could minimize the risks. The attentive human driver performance models and related parameters in traffic critical disturbance scenarios in Annex 3 may be taken as guidance. The capabilities of the system shall be demonstrated in the assessment carried out under Annex 4.

Proposal #3

3.6. *"Critical scenario"* means a traffic scenario **containing a situation in which the ADS needs to perform an emergency manoeuvre in order to avoid/mitigate a potential collision, or react to a system failure** ~~representing unusual and/or unexpected object behaviours and/or road conditions~~.

3.13. *"Nominal scenario"* means a traffic scenario **containing a situations that reflect regular and non-critical driving manoeuvres** ~~representing usual and/or expected object behaviours and/or road conditions~~.

3.21. *"Traffic scenario"* **is a sequence or combination of situations used to assess the safety the safety requirements for an ADS. Scenarios include a DDT or sequence of DDTs. Scenarios can also involve a wide range of elements, such as some or all portions of the DDT; different roadway layouts; differenct types of road users and objects exhibiting static or diverse dynamic behaviours; and, diverse environmental conditions (among many other factors)** ~~means a description of one or more real-world driving situations that may occur during a given trip~~.

Justification

Because the terms of "critical scenario", "nominal scenario", and "traffic scenario" are already defined in NATM guidelines, the definition should be aligned to it.

Ref. NATM Guidelines Annex 1

"Critical Scenarios" means a traffic scenario containing a situation in which the ADS needs to perform an emergency maneuver in order to avoid/mitigate a potential collision, or react to a system failure.

"Nominal Scenarios" means a traffic scenario containing situations that reflect regular and non-critical driving manoeuvres.

"Traffic scenario" (or scenario for short) is a sequence or combination of situations used to assess the safety requirements for an ADS. Scenarios include a DDT or sequence of DDTs. Scenarios can also involve a wide range of elements, such as some or all portions of the DDT; different roadway layouts; different types of road users and objects exhibiting static or diverse dynamic behaviours; and, diverse environmental conditions (among many other factors)

Reservation

3.23. *"(ADS) User"* means a human being using an ADS where dynamic control of the vehicle is entirely maintained on a sustained basis by the ADS performance of the DDT.

Justification

Japan would like to clarfy whether the definition of the "(ADS) User" include not only driver and fallback user, but also other kind of users such as "passenger", "driverless operation dispatcher", "remote assistant" etc., because that affects other provisions in this document.

FYI, in SAE J 3016 (see para 3.31), the term "[Human] User" is defined as a general term referencing the human role in driving automation, with the note that the following five terms (1 – driver, 2 – passenger, 3 – DDT fallback-ready user, 4 – driverless operation dispatcher, and 5 – remote assistant) describe categories of (human) users.

Proposal #4

Insert the new paragraph below before 5.1.

5.1. As a general concept, the safety level of ADS shall be equal to or higher than conventional human driver performance in order to ensure the safety benefit from ADS. Subsection A, B and C shall follow this concept and shall ensure the ADS performance at least to the level at which a competent and careful human driver could minimize the unreasonable safety risks to the drivers and other road users.

5.1bis. Subsections A, B, and C concern ADS performance of the DDT. The recommended requirements have been drafted for worldwide application. These requirements, therefore, do not specify technical performance limits due to the diversity of ODD-specific conditions and requirements that may influence safe performance of the DDT.

Justification

Safety level concept is essential for furhter discussion about detail pass/fail criterion. Japan thinks that ADS should be equal to or safer than human driver with competence and care in genaral. On the base of this concept, we can decide further detail requirements.

FYI, this concept is similar to UNR 157.

Ref. UNR 157

5. System Safety and Fail-safe Response
5.1. General Requirements

5.1.1.1. The ALKS shall respond whilst active to any collision which requires a response according to national traffic rules (e.g. bringing the vehicle to standstill) and which could be expected to be recognised by a competent and careful human driver. In the case of such a collision and without prejudice to paragraph 5.4.4.1.1., a transition demand shall be given, unless one is already being given.

5.2. Dynamic Driving Task

5.2.7. For conditions not specified in paragraphs 5.2.4., 5.2.5. or its subparagraphs, the performance of the system shall be ensured at least to the level at which a competent and careful human driver could minimize the risks. The attentive human driver performance models and related parameters in traffic critical disturbance scenarios in Annex 3 may be taken as guidance. The capabilities of the system shall be demonstrated in the assessment carried out under Annex 4.

Proposal #5

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 **not cause any traffic accidents resulting in injury or death that are reasonably** ~~avoid collisions where~~ **foreseeable and** preventable.

Justification

Japan proposes to revise the sentence here to be more exactly consistent with the description in the framework document (para 2 in the section of "Safety Vision").

Also, FYI: UNR157:

5. System Safety and Fail-safe Response

5.1. General Requirements

5.1.1. The activated system shall perform the DDT shall manage all situations including failures, and shall be free of unreasonable risks for the vehicle occupants or any other road users.
The activated system shall not cause any collisions that are reasonably foreseeable and preventable. If a collision can be safely avoided without causing another one, it shall be avoided.

Proposal #6

5.11.3.1.3 The interaction should be simplified:

(a) [**Limit the number of roles**]~~.....~~

5.11.4.1.2. The ADS shall inform the user on the current conditions:

(a) ADS status information

(b) The availability of automated features

(c) **User role**

5.11.11.1. The HMI of an ADS which permits a transition of control shall be integrated with the entire vehicle HMI

5.11.11.1.1. The entire HMI design should be defined and the integration with ADS HMI assured by analysis and/or test.

5.11.11.1.2. The vehicle and ADS HMI need to take into account potential impairments of users (such as colour blindness, impaired hearing) which do not require specific hardware adaptations of the vehicle.

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.

5.12.1.10. Pursant to a traffic accident, the ADS shall stop the vehicle.

5.12.1.11. The ADS shall signal [faults/failures] compromising its capability to perfom the entire DDT relevant to the ODD of its feature(s)

5.12.1.12. In the absence of a fallback-ready user, the ADS should fallback directly to a MRC.

Justification

Maybe unintentinal deletions from Doc.5