OICA-CLEPA Document: ADAS-02-11

**OICA-CLEPA COMMENTS on ADAS 01-05**

**Considerations for ADAS definition and the scope for the TF on ADAS activity**

1. **Background**

[…]

1. **ECE/TRANS/WP.29/1140 – Reference document with definitions of Automated Driving under WP.29 and the General Principles for developing a UN Regulation on automated vehicles**

Comparison between the Driver Automation Levels 2 & 3

The table below was prepared on the basis of ECE/TRANS/WP.29/1140 with the inclusion of clarifications provided by the experts from Germany.

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| --- | --- | --- |
| **Item** | **SAE Level 2** | **SAE Level 3** |
| Addressing non-driving-related tasks by the driver | Not possible | Possible |
| Monitoring the driving environment, OEDR | By the driver as the system is not able to detect all the situations | By the system (within ODD) |
| System deactivation by the driver | Immediately upon request by the driver | Immediately upon request by the driver, but the system may delay deactivation for safety reasons |
| Transition demand | No transition demand as such, only warnings | The system shall issue the transition demand in certain situations |
| The driver’s engagement | Required and to be ensured (hands-~~off~~**on** detection, **monitoring cameras to detect the driver’s head position and eyelid movement** etc.) | The driver availability recognition required |
| Supervision the DDT execution by the driver | The driver constantly performs the Object and Event Detection and Response (OEDR) Task and is therefore required to intervene whenever necessary. Although the driver may be disengaged ~~partly~~ from the physical aspects of driving, he/she must be fully engaged mentally with the driving task and shall immediately intervene when required by the environment or by the system (no transition demand by the system, just warning in case of misuse or failure). | The driver shall remain sufficiently receptive as to acknowledge the transition demand and, acknowledge vehicle warnings, mechanical failure or emergency vehicles\* (increase lead time compared to level 2). \* Emergency vehicles have to be detected by the system, which has to react accordingly (at least with a transition demand). |
| Override by the driver | Necessary in general | Necessary in general |
| Monitoring the environment by the system | The system may perform OEDR function | It is the task of the system to perform OEDR function |

1. **ITS-12-04: K. Hiramatsu. The Idea of "Driver in the Loop" in Advanced Driver Assistance Systems (2006)**





1. **Deliberation**
2. **Definition**

ADAS – comprehensive electronically controlled vehicle systems aimed at assisting a human driver in performing his/her dynamic driving task through information support including warnings in safety-critical situation and execution of vehicle control in certain situations

* A universal ADAS definition doesn’t seem to be necessary. More importantly, we need to define the scope of the new Regulation and what we understand of it. The name of the new Regulation should be chosen with respect to the scope as well. Note: This general ADAS definition as it is could even include headlamp control.
1. **ADAS Classification**
2. ADAS providing information support
3. ADAS providing useful information (traffic sign recognition)
4. ADAS providing safety-critical warnings (collision warning)
5. ADAS executing vehicle control
6. Providing momentary intervention during potentially hazardous situations (AEBS)
7. Operating a vehicle on a sustained basis (Adaptive Cruise Control)
8. Driving Automation Level 1 – providing either longitudinal or lateral control
9. Driving Automation Level 2 – providing both longitudinal and lateral control

**Alternative attempt at ADAS Classification**

Since the original proposal under “B” triggers the question whether different classes of ADAS could be combined and how this new system would then be approved the alternative proposal aims to distinguish different types of ADAS according to different sub-categories.

|  |  |
| --- | --- |
| **Criterion** | **Different aspects in that category** |
| **Role of the system/****Role of the driver** | System executes no vehicle control Driver performs entire DDT | Systems that partly assist the human driver in performing the DDT, by executing longitudinal or lateral controlExecute part of the DDT + supervise the vehicle behaviour and the environment | System performs both longitudinal and lateral control human-driver supervision of the vehicle behaviour and the environment |

|  |  |  |  |
| --- | --- | --- | --- |
| **DDT** | System executes no vehicle control, provides just information  | systems that control longitudinal or lateral motion | systems that control both |

|  |  |  |  |
| --- | --- | --- | --- |
| **temporary vs. sustained basis** | System executes no vehicle control, provides just information | systems that intervene as needed (temporarily) to support the driver | systems that control the vehicle motion on a sustained basis |

1. **~~Conditions~~ General Principles**

ADAS operating a vehicle on a sustained basis shall not affect the driver engagement in control over a vehicle regarding the following aspects:

**Responsibility of the driver**

* ~~The driver shall monitor the driving environment and constantly perform the Object and Event Detection and Response (OEDR) Task;~~
* The driver shall execute the OEDR by monitoring the driving environment and responding if necessary.
* Although the driver may be disengaged ~~partly~~ from the physical aspects of driving, he/she must be fully engaged mentally with the driving task;
* Determine when activation or deactivation of the system is appropriate.
* The driver shall immediately intervene and override the system whenever necessary;
* ~~The driver is not allowed addressing non-driving-related tasks by the driver;~~
* The driver shall not perform secondary activities which will hamper him in intervening immediately when required.

**Provisions addressed to the system**

* ~~The driver’s engagement required and to be ensured (hands-off detection, etc.);~~
* The system shall implement means todetect the driver’s involvement in the monitoring task and ability to intervene immediately (e.g. hands off detection, head and/or eye movement and/or input to any control element of the vehicle).
* The system ~~shall not~~ is not expected to issue a transition demand to the driver and may warn the driver in case of misuse or failure;
* The ~~driver~~ system shall provide means to ~~be able to~~ deactivate the system immediately when needed;
* The system may ~~partly~~ perform OEDR function.
1. **Relevance for regulating by UN Regulation No. 79**

The scope of UN Regulation No. 79 is steering equipment.

ADAS providing information support and ADAS providing vehicle longitudinal control do not fall in the scope of UN Regulation No. 79.

1. **The TF on ADAS scope**

Which ADAS (section B above) shall be covered by the TF on ADAS for the time being and at the next stage(s)?

Note: The scope of the TF on ADAS and the scope of the new regulation are two different things.

The **scope of the TF on ADAS** is in two parallel workstreams to

* amend R79 on the basis of existing GRVA proposals to resolve existing issues with R79 provisions, and
* to draft a new regulation to address functions not fully covered by the provisions of R79.

The **scope of the new regulation** should address ADAS that control the longitudinal and lateral motion of the vehicle on a sustained basis under continuous human-driver supervision of the vehicle behaviour and the environment, if suitable expanding the developed approach

to systems that provide only lateral control on a sustained basis (e.g. ACSF B1 and ACSF C).

