

## Proposal for a new UN Regulation on

### Uniform provisions concerning the approval of vehicles with regard to Automated Lane Keeping Systems

#### Extracted parts relevant to DSSAD

#### 2. Definitions

- 2.15. “Data Storage System for Automated Driving (DSSAD)” enables the determination of interactions between the ALKS and the human driver.<sup>+</sup>
- 2.17. “Occurrences” means, in the context of DSSAD provisions in paragraph 8, an action, ~~fact~~ or instance of an arising event or incident, which requires storage within the data storage system. ~~occurring, something that happens, event or incident.~~

#### 8. Data Storage System for Automated Driving Systems (DSSAD)

- 8.1. Each ~~vehicle~~ Vehicles equipped with ALKS (~~the system~~) shall be fitted with a DSSAD that meets the requirements specified below. The fulfilment of the provisions of this paragraph shall be demonstrated by the manufacturer to the technical service during the inspection of the safety approach as part of the assessment to Annex 4.
- [National and regional laws may provide for additional requirements regarding the data elements collected and their availability.]<sup>2</sup> This Regulation is without prejudice to national and regional laws governing access to data, privacy and data protection.
- 8.2. Recorded occurrences
- 8.2.1. Each vehicle equipped with a DSSAD shall at least record an entry for each of the following occurrences upon activation of the system:
- a) Activation of the system
  - b) Deactivation of the system[, due to:]
    1. Use of dedicated means for the driver to deactivate the system
    2. Override on steering control
    3. Override by accelerator control while holding steering control
    4. Override by braking control while holding steering control
  - c) Transition Demand by the system[, due to:]
    1. Planned event
    2. Unplanned event
    3. Driver unavailability
    4. Driver presence

**Commented [nt1]:** Note – describe the possibility to record VIN or other personal data – need GRVA guidance.

<sup>+</sup>To be revised in accordance with IWG on EDR/DSSAD.

<sup>2</sup> This text if adopted can either be placed in 8.1 or in 8.4.1.

5. System failure
6. System override by braking input
7. System override by accelerator input
- d) ~~Reduction or s~~Suppression of driver input
- e) ~~Start of e~~Emergency Manoeuvre
- ~~f) Detected risk of imminent collision~~
- f) ~~Detected end of imminent risk of collision~~ End of emergency manoeuvre
- g) Event Data Recorder (EDR) trigger input
- h) Involved in a detected collision ~~Collision detected~~  
Note: This may be reviewed to be in line with 5.1.1.
- i) Minimum ~~Minimal~~ Risk Manoeuvre engagement by the system
- j) Severe ALKS failure
- k) Severe vehicle failure
- l) [Lane crossing during a minimum risk or emergency manoeuvre  
~~Detected deviation of lane of travel]~~<sup>3</sup>
- m) [Demist on
- n) Demist off
- o) Windscreen wipers on
- p) Windscreen wipers off
- q) Headlamp on
- r) Headlamp off]

Each entry of Occurrences n) – s) shall be recorded if relevant functions are installed on the vehicle.

### 8.3. Data elements

8.3.1. For each event listed in para. 8.2., the DSSAD shall at least record the following data elements in a clearly identifiable way:

- The occurrence flag, as listed in ~~section 2~~ para. 8.2
- Reason for the occurrence, as appropriate, and listed in para. 8.2.
- ~~• Software versions relevant to the system~~
- Date (Resolution: yyyy/mm/dd)
- Timestamp
  - Resolution: hh/mm/ss/[ms] timezone e.g. 12:59:59:500 UTC
  - Accuracy: +/- [1.0] s

8.3.2. ~~For each event listed in para. 8.2., the RxSWIN for ALKS, or the Software versions relevant to ALKS, indicating the software that was present at the time when the event occurred, shall be clearly identifiable.~~

8.3.3. ~~The sampling interval shall be chosen such that at least the TD, MRM, EM and overriding related data sequences are recorded with separate timestamps. A single timestamp may be allowed for multiple elements recorded simultaneously within the timing resolution of the specific data elements. If more than one element is recorded with the same timestamp, the information from the individual elements should indicate the chronological order.~~

<sup>3</sup> Only consider if lane change permitted

Note Proposals below have not been discussed by the EDR-DSSAD and thus are provided for GRVA reference

8.4. Data availability

8.4.1. DSSAD data shall be available subject to requirements of national and regional law.<sup>4</sup>

8.4.1. [Note - proposed alternative 8.4.1 language - DSSAD data availability shall be subject to requirements of national and regional law but shall at least be available for a period of [6 months] of use.]

8.4.2. Once the storage limits of the DSSAD are achieved, existing data may [only] be overwritten following a first in first out procedure with the principle of respecting the relevant requirements for data availability.

8.4.2. [Note - proposed alternative 8.4.2 language - Documented evidence regarding the sufficient storage capacity shall be provided by the vehicle manufacturer along with an associated control strategy in case storage limits are reached as part of the Annex 4 assessment.]

8.4.3. The data shall be retrievable even after an impact of a severity level set by UN Regulations Nos. 94, 95 or 137, or other relevant national crash test procedures. If the main on-board vehicle power supply is not available, it shall still be possible to retrieve all data recorded on the DSSAD, as required by national and regional law.

8.4.3. [Note - proposed alternative 8.4.3 language - The data shall be retrievable even after an impact of a severity level set by UN Regulations Nos. 94, 95 or 137; or other relevant national crash test procedures. If the main on-board vehicle power supply is not available, it shall still be possible to retrieve all data recorded on the DSSAD, as required by national and regional law.]

8.4.4. Data stored in the DSSAD shall be easily readable in a standardized way via the use of an electronic communication interface, at least through the standard interface (OBD port).

8.4.4. [Note - Proposed alternative 8.4.4 language - Each manufacturer of a motor vehicle equipped with a DSSAD shall ensure by licensing agreement or other means that a tool(s) is commercially available that is capable of accessing and retrieving the data stored in the DSSAD that are required by this regulation.]

8.4.5. Instructions from the manufacturer shall be provided on how to access the data.

8.5. Protection against manipulation.

8.5.1. It shall be ensured that there is adequate protection against manipulation of stored data such as anti-tampering design.

8.6. Availability of DSSAD operation

8.6.1. DSSAD shall be able to communicate with the system to inform that the DSSAD is operational.

[8.7. Verifications by the Technical Service:

8.7.1. The Technical Service shall verify, using the standard interface defined in 8.4.4., after having performed the tests specified in Annex 5, that DSSAD is recording occurrences and the relevant data elements with the appropriate resolution, accuracy and sampling interval according to the provisions above.

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<sup>4</sup> (NOTE: Based on a recent CP data study, the IWG on EDR/DSSAD is considering that the text specifies several timestamps specifications of 2500 timestamps to correspond with a period of 6 months of use.

8.7.2. Until testing provisions are being defined, the Technical Service shall verify the documentation provided the Manufacturer demonstrating the retrievability of data as requested in para. 8.4.3.

8.7.3. The Technical Service shall verify the documentation provided by the manufacturer that demonstrate that a data integrity self-check function and that adequate protection against manipulation of stored data are implemented.]

## **Annex 1<sup>5</sup>**

### 9. Data Storage for Automated Systems (DSSAD):

9.1. DSSAD Type Approval Number<sup>6</sup> .....

**Note - Proposed replacement language for 9.1 and added language for 9.2 below**

9.1. DSSAD performance verified after the tests performed according to Annex 5: yes/no

9.2. DSSAD documentation concerning data retrievability, data integrity self-check and protection against manipulation of stored data verified: ..... yes/no

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<sup>5</sup> Needs revision and consistency check.

<sup>6</sup> Align with work of IWG on EDR/DSSAD