



Economic Commission for Europe**Inland Transport Committee****World Forum for Harmonization of Vehicle Regulations****Working Party on Automated/Autonomous and Connected Vehicles****Ninth session**

Item 4 (d) of the provisional agenda

Automated/autonomous and connected vehicles:**UN Regulation on Automated Lane Keeping System****Proposal for amendments to the draft UN Regulation on uniform provisions concerning the approval of vehicles with regards to Automated Lane Keeping System****Submitted by the experts from the International Organization of Motor Vehicle Manufacturers and the European Association of Automotive Suppliers***

The text reproduced below was prepared by the experts from the International Organization of Motor Vehicle Manufacturers (OICA) and the European Association of Automotive Suppliers (CLEPA). It is based on informal document GRVA-07-21. Changes to the current text of the adopted Regulation (ECE/TRANS/WP.29/2020/81) are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2021 as outlined in proposed programme budget for 2021 (A/75/6 (Sect.20), para 20.51), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.



I. Proposal

Paragraph 6.2.6., amend to read:

6.2.6. ~~On deactivation of the system, there shall not be an automatic transition to any function, which provides continuous longitudinal and/or lateral movement of the vehicle (e.g. ACSF of Category B1 function).~~

~~After deactivation, Corrective Steering Function (CSF) may be active with the aim at accustoming the driver to execute the lateral control task by gradually reducing lateral support.~~

Upon deactivation of the system, an automatic transition to a function which provides continuous longitudinal and/or lateral movement of the vehicle (e.g. ACSF of Category B1) is permitted only if all of the following provisions are fulfilled:

(a) The status indication of ALKS and that of any other function providing continuous longitudinal and/or lateral control can be clearly differentiated.

(b) The prominent status indication as required per paragraph 6.4.2.2. (b) is not used for any other function providing continuous lateral and/or longitudinal control other than ALKS in that vehicle.

(c) Evidence of the effectiveness of the implemented indication to the driver in ensuring mode awareness is provided to and assessed by the Technical Service at the time of type approval.

(d) The function which provides continuous longitudinal movement of the vehicle upon deactivation of the ALKS has implemented strategies to ensure controllability by the driver (e.g. with regard to acceleration) and compliance with the currently valid speed limit after the transition.

~~Notwithstanding both paragraphs above, Any other safety system delivering longitudinal or lateral support in imminent collision situations (e.g. Advanced Emergency Braking System (AEBS), Electronic Stability Control (ESC), Brake Assist System (BAS) or Emergency Steering Function (ESF)) shall not be deactivated in case of deactivation of ALKS.~~

II. Justification

1. The amendment aims to propose provisions by which an automatic activation of functions providing continuous lateral and/or longitudinal control, after ALKS deactivation, could be permitted.

2. The driver will still have to properly take over manual control of the vehicle, as described in paragraph 6.2.5. of the ALKS Regulation but could then afterwards be automatically supported in the driving task.

3. The main concern that arose within the Informal Working Group (IWG) on Automatically Commanded Steering Function, while drafting ALKS with regard to this issue, was that *mode confusion* had to be avoided. The proposed provisions (first three items) aim to address this concern by defining functional principles, appropriate to ensure mode awareness by the driver upon transition to assisted driving. Additionally, the fourth proposed principle aims to ensure that this transition, from automated to assisted driving, remains controllable, so that e.g. neither vehicle speed, distance to another vehicle ahead or acceleration of the vehicle change unexpectedly.

4. Why is assisted driving after an ALKS deactivation favourable from the safety point of view?

(a) As long as the manufacturer implements appropriate strategies to ensure mode awareness, the higher the level of support given to the driver when resuming control upon request by the ALKS, the lesser the risk that a critical situation could result. While safety systems, as permitted in the third sub-paragraph of paragraph 6.2.6., would only intervene

when a critical situation is already imminent, support by continuous longitudinal and/or lateral control will support the driver even before a critical situation arises.

(b) Furthermore, driver studies have shown that drivers favour the highest level of support, independent of which ADAS functions were active before ALKS was activated, because they stated they wouldn't remember what had been active before anyhow and preferred a recognizable behaviour with the highest level of support available.

(c) So, instead of prohibiting this transition to assisted driving for fear of *mode confusion*, clear system design principles, as proposed by this amendment, should be established, by which this transition and its potential positive impact on supporting the driver in resuming control can be permitted.
