

Distr.: General  
4 September 2017

Original: English only

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## **Economic Commission for Europe**

Inland Transport Committee

**Global Forum for Road Traffic Safety**

**Seventy-fifth session**

Geneva, 19-22 September 2017

Item 3 (c) of the provisional agenda

**Convention on Road Traffic (1968):**

**Automated driving**

### **Reflections about an amendment proposal to the 1968 Convention on Road Traffic**

**Submitted by France and the Netherlands**

**Note by the secretariat**

This document, submitted by France and the Netherlands, provides reflections on two amendment proposals related to Article 8 of the 1968 Convention on Road Traffic. Informal document no. 7 reproduces the text “as submitted” to the secretariat.

1. The experts, members of this informal group, are representing the following countries or organisations: United Kingdom, Belgium, Luxembourg, Germany, Spain, Sweden, Finland, Canada, the Netherlands, Japan, France and the European Commission (DG MOVE), the European organisation of suppliers (CLEPA) and the International organisation of motor vehicle manufacturers (OICA).

2. It is worthwhile to remind that point 19 of the report of the 74<sup>th</sup> WP 1 session stated: On the issue of whether the driver can or cannot engage in other activities when the vehicle is driven by the vehicle systems, the discussion concluded with WP.1 agreeing on the principles in the context of para 6, Article 8 as follows:

When the vehicle is driven by vehicle systems that do not require the driver to perform the driving task, the driver can engage in activities other than driving as long as:

- *Principle 1: these activities do not prevent the driver from responding to demands from the vehicle systems for taking over the driving task,*
- *Principle 2: these activities are consistent with the prescribed use of the vehicle systems and their defined functions.*

Moreover point 21 of the above mentioned report stated that WP.1 further agreed, in response to requests expressed by several of its members, to include these principles in an amendment proposal to the 1968 Convention on Road Traffic to be tabled at the next WP.1 session.

3. A draft amendment prepared by the colleagues of Belgium and Sweden has been considered at the last IGEAD meeting on 27<sup>th</sup> of June 2017 in Geneva (see Annex I of this informal document).

4. No consensus has been reached on this draft amendment:

- some Contracting Parties (CP) feel that no amendment is needed for the time being since the wording "shall minimize" doesn't prevent drivers from being engaged reasonably in other activities;

- some CP supported the amendment (Annex I);

- some others would privilege another draft amendment more simple and which sticks to the agreement reached in the 74<sup>th</sup> WP 1 session recalled above (see Annex II of this informal document).

5. France and the Netherlands submit both drafts amendment to the consideration of WP 1 delegates with the aim to reach an agreement on the way to deal with this issue, namely to table a single draft amendment at the next WP 1 session, if it is the conclusion.

## Annex I

### General comment

*Discussion WP1 march 2017:*

*“Following the presentation discussion ensued. On the issue of whether the driver can or cannot engage in other activities when the vehicle is driven by the vehicle systems, the discussion concluded with WP.1 agreeing on the principles in the context of para 6, Article 8 as follows:*

*When the vehicle is driven by vehicle systems that do not require the driver to perform the driving task, the driver can engage in activities other than driving as long as:*

*Principle 1: these activities do not prevent the driver from responding to demands from the vehicle systems for taking over the driving task, and*

*Principle 2: these activities are consistent with the prescribed use of the vehicle systems and their defined functions.”*

To convert these principles into the convention, and with the aim of harmonizing the rules about the role of the driver, a more concrete wording has to be used. As principals are general by nature, they are not suited for a legal context. It should be clear what drivers may or may not do when an automated driving system is activated. It should also be possible to be controlled by the police, and in in some cases in court (via EDR).

### Summary

- SAE-level 1 & 2 – system activated = human driver has control – article 8, §5 is sufficient;
- SAE level 3 – system activated = human driver has control, article 8, §5 is sufficient, but the obligation to minimize any other activity than driving is softened as the driver is allowed to use the onboard infotainment system, driver has to intervene upon request system;
- SAE level 4 – system activated = human driver no longer has control, the obligation to minimize any other activity than driving is no longer valid, nor the prohibition to use a hand held phone. Article 8, §§5 & 6 are no longer valid, human driver does not have to intervene upon request system;
- SAE level 5 – no human driver = article 8, §1 and article 13, §1, first sentence are no longer valid.

In the proposal for amendment no reference shall be made to these levels as they might change in time and are quite complicated.

The proposal does only makes a reference to the dynamic driving task<sup>1</sup>, as this is what the convention is about (=rules of conduct for the driver). If a system assumes all the dynamic driving tasks, it is of no importance who’s assuming the strategical driving task.

### Convention 68

#### **Amendment of Article 8:**

#### **Paragraph 5bis is deleted.**

~~5bis. Vehicle systems which influence the way vehicles are driven shall be deemed to be in conformity with paragraph 5 of this Article and with paragraph 1 of Article 13, when they are in conformity with the conditions~~

<sup>1</sup> Dynamic driving task includes the operational (steering, braking, accelerating, monitoring the vehicle and roadway) and tactical (responding to events, determining when to change lanes, turn, use signals, etc.) aspects of the driving task, but not the strategic (determining destinations and waypoints) aspect of the driving task. - SAE

~~of construction, fitting and utilization according to international legal instruments concerning wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles\*~~

~~Vehicle systems which influence the way vehicles are driven and are not in conformity with the aforementioned conditions of construction, fitting and utilization, shall be deemed to be in conformity with paragraph 5 of this Article and with paragraph 1 of Article 13, when such systems can be overridden or switched off by the driver.~~

This § is not necessary. What does the wording “deemed to be in conformity with...” exactly mean? – Reading this sentence as it stands it seems that when such a system is activated, a driver is considered as being at all times able to control his vehicle; meaning that the simple fact of activating the system has thus as a consequence that the driver has the vehicle under control. By consequence, the driver has no other remaining tasks in this case....this is not what we were aiming at. The words deemed to be in conformity are not the best choice, they are not only unclear but seem to have other consequences than what we wanted.

As in the Geneva convention this § is not mentioned, the deletion is no problem. On the contrary it brings the two conventions more in line.

For systems of SAE-level 1-2 (= system performs parts of the DDT) are activated, nothing changes, all articles stay valid.

Conclusion for SAE level 1-2 – no changes necessary.

**Paragraph 6 is completed with two indents, reading as follows:**

**When an automated driving system assuming all dynamic driving tasks within a limited operational design domain, with the expectation that the driver will respond to requests to intervene, is active, the use of the on-board infotainment system is allowed. The driver has to respond upon any request to intervene in accordance with what is requested by the automated driving system and/or in case of an evident vehicle system failure.**

This indent is about systems of SAE-level 3 (= system perform the entire DDT in a certain use case, fall back is driver). The obligation for the driver to at all times be able to control the vehicle stays valid, as well as the obligation to minimize any other activity. This principle applies as it does to “normal” driving. Meaning that they can also put on the radio, smoke a cigarette, put on the airconditioning,... However, when such a system is activated the driver is also allowed to use the onboard infotainment system. Using a hand held phone is prohibited. The driver has to respond upon the request of the system in accordance with what the systems expect the driver to do, this request can be done via the on-board infotainment system as well as via other systems which are built in the vehicle. The driver shall also have to respond in case of an evident vehicle system failure, for example a flat tire; this is about evident and apparent technical failures of the vehicle.

Systems which are linked to the vehicle itself, such as the use of the on-board infotainment system (which in “normal driving mode” are not allowed because not in line with minimizing any other activity, it’s more about maximizing any other activity) will at the same time alert the driver when he has to reassume the driving task, are thus allowed. It is better that drivers have something to do when systems of SAE-level 3 are active . If not they would become less attentive and thus less receptive to warnings from the system to reassume the driving task.

This way car manufacturers will know what to do exactly. The use of the onboard infotainment system guarantees a direct link between the system and the driver. Allowing drivers to read a book, do other things while holding something in their hands... would mean that it becomes more and more difficult to get the

driver back in the loop, to get their hands back on the steering wheel. The aim is to have a secure and controllable (via EDR) link between the car and the human driver.

**When an automated driving system assuming all dynamic driving tasks within a limited operational design domain, without any expectation that the driver will respond to a request to intervene, is active, §§5 & 6, first sentence, of this Article and Article 13, §1, first sentence, are not valid.**

**When an automated driving system assuming all dynamic driving tasks within a limited operational design domain is active in vehicles which are exclusively used within the limited operational design domain of the system, paragraph 1 of this Article does not apply.**

This indent is about systems of SAE-level 4 (= system perform the entire DDT in a certain use case, fall back is system). There is still a driver necessary if the system is activated, even if in this case the driver has become a “passenger”. If there would be no (theoretical) driver anymore, it will be impossible to determine who to turn to in case of an accident and/or traffic offences. Better to keep the human “driver” in first instance “liable”, and he/she might afterwards turn to the car manufacturer if the system was driving within its ODD (product liability). Level 4 systems are limited to an operational design domain, meaning that a driver will be necessary to drive the vehicle to the place where the system can be activated or at the end of the use case of the system (even if it is for this level not obligatory to respond to a request to intervene). If such a system is active the obligation for the driver to at all time be able to control the vehicle is no longer valid. The obligation to minimize any other activity than driving nor the prohibition to use a hand held phone stay valid.

Systems capable of performing all the dynamic driving tasks on a certain stretch of highway are an example.

In this case the driver must not (necessarily) respond to a possible request to intervene by the system. As the driver is not in control when such a system is active, it’s up to the driver to decide if he responds or not. This avoids the problem of HMI, we can’t expect from drivers which are completely out of the loop that they will be able to respond as deemed necessary within a given time. These systems must always bring the car to a safe place when the driver doesn’t react on a request to intervene. The §§3 & 4 stay valid, physical and mental ability to drive + knowledge and skill necessary for driving the vehicle.

The second sentence is about pods & shuttles with a limited ODD, but only being used within that ODD. For these vehicles, which operate fully autonomous within a geographical area, and under the condition that they are only being used within their ODD, a driver is not necessary (this vehicle does not have to be driven to the place where the system can be activated).

**A paragraph 7 is introduced, reading as follows:**

**7. When an autonomous driving system assuming all the dynamic driving tasks within an unlimited operational design domain, is active, paragraph 1 of this Article does not apply.**

This paragraph is about systems taking over the dynamic driving task without any ODD-limits. In this case there is no driver (= “paragraph 1 does not apply”). And because there is no driver, paragraph 5 and 6 loose there validity as well, because there is simply no driver.

This paragraph is also valid for systems which are built in in cars which allow to drive without a driver and also allow to be driven manually. In case the driver switches it off (if the system allows this possibility of course), than the vehicle is in manual driving mode. The EDR will show this. If after some manual driving the driver wants to reactivate the level 5 system, he may do so (in line with the possibilities of the system of course, maybe he shall have to stop first,...) and as from the moment of activation of the system he is no longer a driver.

**A paragraph 8 is introduced, reading as follows:**

**8. The rules of the convention which apply for road users and drivers apply mutatis mutandis for the automated driving systems mentioned in §6 of this Article and for the autonomous driving systems mentioned in §7 of this Article.**

This is about systems SAE 3-4 & 5.

**Amendment of Article 39:**

**Article 39, §1, is amended as follows:**

**1. Every motor vehicle, every trailer and every combination of vehicles in international traffic shall satisfy the provisions of Annex 5 to this Convention. It shall also be in good working order. When these vehicles are fitted with systems, parts and equipment that are in conformity with the conditions of construction, fitting and utilization according to technical provisions of international legal instruments concerning wheeled vehicles\*, they shall be deemed to be in conformity with Annex 5.**

\*The UN Regulations annexed to the "Agreement concerning the adoption of uniform technical prescriptions for wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles and the conditions for reciprocal recognition of approvals granted on the basis of these prescriptions" done at Geneva on 20 March 1958.

The UN Global Technical Regulations developed in the framework of the "Agreement concerning the establishing of global technical regulations for wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles" done at Geneva on 25 June 1998.

Instead of referring to a footnote in article 8 it is better to directly place this in a footnote under article 39. In article 8 there is no reference anymore to the international agreements. This is not necessary, because if systems are in conformity with the above mentioned UNECE regulations they have to be accepted in international traffic.

## Annex II

### ARTICLE 8

#### Drivers

1. Every moving vehicle or combination of vehicles shall have a driver.
2. It is recommended that domestic legislation should provide that pack, draught or saddle animals, and, except in such special areas as may be marked at the entry, cattle, singly or in herds, or flocks, shall have a driver.<sup>2</sup>
3. Every driver shall possess the necessary physical and mental ability and be in a fit physical and mental condition to drive.
4. Every driver of a power-driven vehicle shall possess the knowledge and skill necessary for driving the vehicle; however, this requirement shall not be a bar to driving practice by learner drivers in conformity with domestic legislation.
5. Every driver shall at all times be able to control his vehicle or to guide his animals.<sup>3</sup>

<sup>4</sup> See footnote.

(a) Vehicle systems which influence the way vehicles are driven shall be deemed to be in conformity with the first sentence of this paragraph and with paragraph 1 of Article 13, when they are in conformity with the conditions of construction, fitting and utilization according to international legal instruments concerning wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles.<sup>5</sup>

(b) Vehicle systems which influence the way vehicles are driven and are not in conformity with the aforementioned conditions of construction, fitting and utilization, shall be deemed to be in conformity with the first sentence of this paragraph and with paragraph 1 of Article 13, when such systems can be overridden or switched off by the driver.

6. A driver of a vehicle shall at all times minimize any activity other than driving. Domestic legislation should lay down rules on the use of phones by drivers of vehicles. In any case, legislation shall prohibit the use by a driver of a motor vehicle or moped of a hand-held phone while the vehicle is in motion.

**However, when the vehicle is driven by vehicle systems that do not require the driver to perform the driving task, the driver can engage in activities other than driving as long as:**

- (a) **these activities do not prevent the driver from responding to demands from the vehicle systems for taking over the driving task, and**
- (b) **these activities are consistent with the prescribed use of the vehicle systems and their defined functions.**

<sup>2</sup> See also Point 7 of the Annex of the European Agreement

<sup>3</sup> See also Point 7 of the Annex of the European Agreement

<sup>4</sup> Additional paragraph introduced in the Annex of the European Agreement (see Point 7)

<sup>5</sup> The UN Regulations annexed to the "Agreement concerning the adoption of uniform technical prescriptions for wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles and the conditions for reciprocal recognition of approvals granted on the basis of these prescriptions" done at Geneva on 20 March 1958.

The UN Global Technical Regulations developed in the framework of the "Agreement concerning the establishing of global technical regulations for wheeled vehicles, equipment and parts which can be fitted and/or be used on wheeled vehicles" done at Geneva on 25 June 1998.