

WG2 conclusions/recommendations on road safety:

1) The 1968 Vienna Convention as recently amended seems sufficient for upcoming systems but a way needs to be found to assess performance with the human driver in the loop. Level 3 Driving is a special challenge. Member States should confirm in UNECE if these provisions of the Vienna Convention include levels 3 or 4 as defined by the SAE.

2) The vehicle shall be designed to ensure that the driver is active/aware if needed. The driver shall be made aware of the limits of the system. Human Machine Interface (HMI) is very important for partially and highly automated vehicles, particularly in relation to the level of attention required for a safe operation of an automated function and for the safe transfer of control between vehicle and driver.

3) The rules for the tasks of the driver/vehicle could be drafted around the following main principles:

a) There is a great expectation by the public that automated vehicles at SAE Levels 2 and 3 will be safer than manually driven vehicles in line with the fact that nearly 90% of accidents are due to human errors (drink-driving, distraction,...). At higher levels of automation (SAE Levels 4 and 5), there will be an expectation of far higher safety.

b) Drivers and vehicles must continue complying with traffic law.

c) The vehicle could be designed so that it is clear to the person in the driving seat whether the automated mode or modes are enabled or not. It would be recommendable a standardisation of HMI indications, so as to reduce the possibility of misunderstanding and confusion when using different vehicles.

d) The vehicle shall be capable of appropriate indication of its intentions in interactions with other road users.

e) The operational desing domain shall be clearly define for each vehicle with respect to its capabilities within traffic flow and roads. It shall also recognise environmental degradations which prevent safe operation, such as reduced visibility. On encountering situations that it cannot handle, it could attempt to hand over driving to the human or to perform a minimum risk manoeuvre.

f) The vehicle shall ascertain that the driver is ready to take over when a take over by the driver is required by the system. The vehicle shall ascertain driver availability, e.g. not being asleep, and shall ascertain that the driver is engaged, i.e. hands on the steering wheel, and has attention to the road and traffic situation. If the vehicle determines that the human is not able or willing to resume control when required to do so, then the vehicle shall take appropriate action. Depending on the SAE level, the vehicle shall warn the driver and/or perform a minimum risk manoeuvre in which it secures as little danger as possible to the vehicle occupants and other road users.

h) It must be recommendable to set requirements and description of the vehicle assessment.

Comment [JJAB1]: At level 4, the human being in driver seat is not presumed to take over control if required by system.

Deleted: as long as there is a driver able to take the control of the car

Deleted: .

Comment [JJAB2]: There is only a need of definition of levels (SAE) for which the dynamic driving tasks (DDT) are stated and general attributions set, but this will not be established in any regulation neither international nor national

Deleted: Tasks of the vehicles and the driver shall be clarified/regulated in the relevant instruments (e.g. vehicle legislation, driving licence and traffic rules). This is to be discussed as soon as possible in the relevant groups in UNECE (WP1/WP29).

Deleted: will be

Deleted: n

Deleted: the principle that robots shall not cause injury to humans.¹

Comment [JJAB3]: Spain does not agree with such a statement, systems will be safer than human drivers as it is being demonstrated during decades with the introduction of ADAS like ESP, ABS which improves driving capabilities of human and avoids (or help to) collisions. Additionally, it all could be deleted, because everyone believes so it is stated in different ...

Comment [JJAB4]: From our ...

Deleted: When operating under vehicl ...

Comment [JJAB5]: What does that ...

Deleted: shall

Deleted: what is the operational ...

Deleted: authority

Deleted: of

Deleted: currently

Deleted: There needs to be an HMI ab ...

Deleted:

Comment [JJAB6]: This is related to ...

Comment [JJAB7]: This is a matter of ...

Comment [JJAB8]: What other gestur ...

Deleted: This would of course include ...

Deleted: .

Deleted: Automation shall not be enab ...

Comment [JJAB9]: This is clearly in ...

Deleted: shall

Deleted: .

Deleted: ¶ ...

Comment [JJAB10]: Points f) and g) ...

Comment [JJAB11]: Vehicle assessment

Deleted: There needs to be a means to ...