Submitted by the experts from CLEPA and OICA

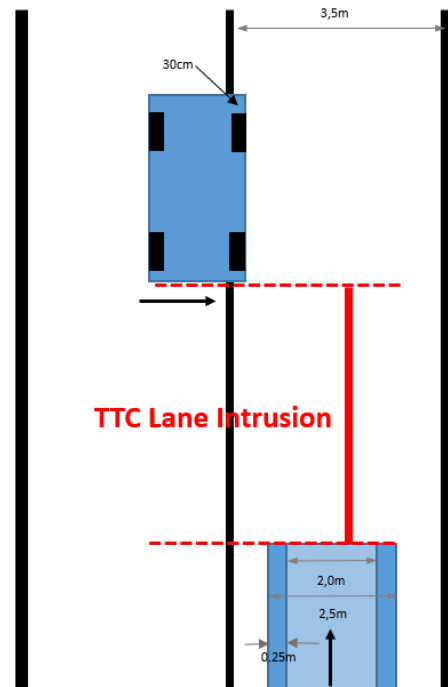First answers to questions in red by industry

ALKS for HCVs

Background:
- Industry prepared a proposal to amend UN R157 to expand the scope of the regulation from M1 only to all M and N vehicle categories: see GRVA-2021-03 and GRVA-09-19.

- Last Friday on the 29th of January industry organized an ALKS workshop together with interested CPs, and collected comments.

- Industry would like to prepare input (e.g. a Q&A) to address questions for the next meeting of the Special interest group on ALKS.

Expectations from GRVA-09:
- Collect new comments from CPs not able to attend the workshop last week.

- Confirm collected questions during the workshop:

  1. Current requirements applicable to M1 are limiting the maximum deceleration during the MRM to 4m/s²; should this value be adapted to other vehicle categories, given the lower deceleration potential of heavier categories compared to passenger cars?

     - MRM in para. 5.5.1. requires a deceleration not greater than 4 m/s². That means a lower value is possible.

     - Minimum brake performance required by R13 for service braking system is 5 m/s².

     - Deceleration value of 4 m/s² reflects the expectations of the other traffic participants, therefore independent from the ego-vehicle.

     - There is no difference in the perception if a passenger car or a CV is decelerating.

  2. The requirements define a table with the minimum following distance between a passenger car equipped with an active ALKS and the preceding vehicle. Industry is expected to review whether and how the HCVs parameters impacts the values in the table.

     - Add vehicle cat. N1 also to the already existing table for vehicle cat. M1.

     - Minimum performance of the service brake for R13 vehicle about 25% lower than for R13-H-vehicle (6.43 m/s² compared to 5m/s²)

     - Therefore, 25% more minimum following distance needed → additional 0.4s on the time gap compared to M1-vehicles

  3. In the section about the cutting-in scenario, should the parameter "TTCLaneIntrusion" be modified, considering the width of HDVs compared to a passenger car?

     - No influence on the TTC by the width of the ALKS-vehicle. No value in the equation is depending on the width of the ALKS vehicle.

- TTC is a time, which is depending on the rear-most point of the cutting in vehicle and the front most point of the ALKS vehicle. The 0.3 m is just a defined value which specifies the point when the vehicle is intruding in the lane of the ALKS vehicle. This is independent of

the width of the ALKS vehicle.

4. The 3 previous questions raise the question of whether the different dynamic behaviour of HCVs compared to PCs may impact some other requirements in the regulation.

- We checked the whole ALKS regulation for necessary amendments for CVs and all necessary amendments are reflected in the industry proposal.
- We rechecked the following paragraphs, where the dynamic behaviour of the ALKS vehicle is reflected:
  - Imminent collision risk (para 2.6.): deceleration of 5 m/s² is not depending on the ALKS vehicle dynamics. It defines, that a collision is not avoidable by less than 5 m/s².
  - Emergency manoeuvre (para. 5.3.2.): ALKS vehicle shall decelerate the vehicle up to its full braking performance
  - Crossing pedestrian (para. 5.2.5.3.): unusual situation compared to para 5.2.5.2. (TTC) → manufacturer must implement strategies to fulfil the requirement.
  - MRM: see question 1
  - Minimum Following Distance: see question 2
  - TTC: see question 3
- Industry is interested to get to know about the potentially missed items

5. Why is the trailer communication not included in the proposal, e.g. for the motor vehicle to get information for example about the length and the width of the trailer?

- The detection area beside the vehicle or combination can be handled by the towing vehicle only. That is different to the ACSF-C, where the area behind the trailer has to be detected with a minimum value of 55 m
- To fulfil para. 5.2.5. (detection the risk of a collision), just a rough knowledge of the length of the combination is needed (e.g. sensors which detect the end of the trailer). Therefore, no communication needed.

- Para. 7.1.2. (Lateral detection range), para. 5.2.1. (Lane Keeping) and para. 5.2.5. (Detection the risk of a collision) must be fulfilled technology neutral → no need for communication between truck/trailer, as e.g., this can be done from the truck.
- As an example, please see the range defined for BSIS:

BSIS_range.pptx

6. With regard to the requirements on the severity level of the impact up to which the data should remain retrievable from the DSSAD, the references to UN Regulations Nos. 94, 95 or 137 is not relevant for vehicles other than M1 or N1. A solution should be found, including the validation method for the certification.

- Industry is in discussions for a solution.

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