<table>
<thead>
<tr>
<th>Open issue(s)</th>
<th>Positions</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed increase</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Para 5.2.8:** For the minimum safety distance the approach was to linear scale with the DE requirement of 1.8 s at speeds of 80 km/h or above and a low limit of 1.0 s at slow speeds in a traffic jam with an absolute minimum of 2 m. Above (80 km/h) 100 km/h was defined to meet traffic law (1.8 s / 1 sec or other CPs). Interpolation between 60 km/h and 100 km/h is not.

(OICA/CLEPA): The table should not be deleted because the requirement like "the vehicle shall not cause collision" are ambiguous and considered differently between Ts, and the minimum requirements for important parameters are effective in order to ensure safety. Without table, there is some concern for approval of ADS with substandard level. Japan is discussing internally the concrete value. Japan will provide proposal at the following SIG. Nevertheless, the system shall implement appropriate strategies in order to ensure safe operation at all times.

JRC: No need for a table as already covered by collision avoidance requirements-risk for traffic flow possible contradiction with traffic rules.

SE: Keep the table (as proposed by DE).

UK: keen to keep the table as 2 sec is in traffic rules (DE text: 0.1 s revised to 2 sec).

UNR157-03-06 (EC) UNR157-03-08 (JP)

### Maximum speed

<table>
<thead>
<tr>
<th>Maximum speed (km/h)</th>
<th>Minimum forward detection range (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>200</td>
</tr>
<tr>
<td>60</td>
<td>160</td>
</tr>
<tr>
<td>80</td>
<td>110</td>
</tr>
<tr>
<td>100</td>
<td>75</td>
</tr>
<tr>
<td>110</td>
<td>50</td>
</tr>
<tr>
<td>120</td>
<td>90</td>
</tr>
<tr>
<td>130</td>
<td>110</td>
</tr>
<tr>
<td>150</td>
<td>150</td>
</tr>
</tbody>
</table>

For values not mentioned in the table, linear interpolation shall be applied. It is recognized that the minimum forward detection range cannot be achieved under all conditions. Nevertheless, the system shall implement appropriate strategies in order to ensure safe operation at all times.

EC proposal:

5.2.7. String stability general requirements as in 03-06

OICA/CLEPA: Instability often results from driver expected behavior. It is recognized that the minimum forward detection range cannot be achieved under all conditions. Nevertheless, the system shall implement appropriate strategies in order to ensure safe operation at all times.

SE: Need to redraft the following para to ensure the speed is continuously adapted to ensure the detection range required (according to table), due to different conditions. It is recognized that the minimum forward detection range cannot be achieved under all conditions. Nevertheless, the system shall implement appropriate strategies in order to ensure safe operation at all times.

UNR157-03-08 (JP) UNR157-03-06 (EC)
### Speed limits

In each country, how should they be treated under the regulation? (JP)

**JP**: Need to modify UNR157 text because compliance to speed limits is covered by "traffic rule requirement".

**OICA/CLEPA**: Agree with Japan. This is covered by traffic rules. We understand this to be the case even with the current ALKS provisions, because the system has to comply with the traffic rules related to IDTs, and even though they do not occur frequently, in some areas speed limits below 60km/h do exist. So this should already be covered by the existing UNR157 text.

Clear: OK. But still maybe text for speed sign recognition?

### Line between type approval/traffic rules (JP)

**JP**: Are there any cases where following traffic law could cause change? If so, how should we treat these cases in regulation?

Clear: Priority of safety over traffic rules?

This issue should be considered in WP1. Before reaching any conclusion from the discussion above, we propose to keep the provision of "the activated system shall comply with traffic rules" in 5.2.1.

**OICA/CLEPA**: A potential scenario that leads to this conflict could be a situation where an evasive maneuver crossing lane markings could avoid a potential collision, but the lane is marked by a solid line prohibiting lane crossing. In general, traffic rules usually already contain that type of exceptions to those rules.

As suggested by EC in ACSF-24-08 a provision like this could be included: "5.1.2. The activated system shall comply with traffic rules relating to the DDT in the country of operation unless there is no other way to avoid an accident." Note: What about violating ALKS requirements in order to avoid a collision?

### Combination of higher speed with lane change

Wouldn’t the system have to be able to change lanes e.g. to provide space at a highway entrance?

**OICA/CLEPA**: Even when the system was capable of performing lane changes the adjacent lane could be occupied so the system would have to have a strategy to behave safely even if a lane change was not possible. And the same applies for a system that is not capable of a regular lane change. It will have to establish operating strategies to ensure safe operation in such situations.

### 2: Expected reaction of the vehicle to critical situations

**DE** proposes to include wrong way driver scenarios removing the reference to complete stop (depends on the scenario)

**JP**: The ADS shall detect the risk of “wrong way driver” and perform appropriate maneuvers to minimize risks. (support EC proposal). "Appropriate maneuvers" should be as safe as or better than competent and careful human drivers. EC proposal to change "bring the vehicle to a complete stop" to "be able to handle in a safe way" seems not appropriate since this modification seems to change the requirement into less stringent way.

**Japan** proposes to keep the original requirement of 5.2.4 as it is, and add additional paragraph requiring the issues that should be handled in a safe way.

**EC**: Alternative model merging the DE and JP model

**EC**: 5.2.5. The activated system shall detect the risk of collision in particular with another road user ahead or beside the vehicle, due to a decelerating lead vehicle, a cutting in vehicle or a blocked lane of travel to avoid a collision. This shall be ensured up to the maximum operational speed of the system.

**EC**: 5.2.4. The activated system shall be able to handle in a safe way the presence in the same lane of bring the vehicle to a complete stop behind a stationary vehicle, a stationary road user or a blocked lane of travel to avoid a collision. This shall be ensured up to the maximum operational speed of the system.

**OICA/CLEPA**: A potential scenario that leads to this conflict could be a situation where an evasive maneuver crossing lane markings could avoid a potential collision, but the lane is marked by a solid line prohibiting lane crossing. In general, traffic rules usually already contain that type of exceptions to those rules.

As suggested by EC in ACSF-24-08 a provision like this could be included: "5.1.2. The activated system shall comply with traffic rules relating to the DDT in the country of operation unless there is no other way to avoid an accident." Note: What about violating ALKS requirements in order to avoid a collision?

**JP** This issue cannot be dealt with WP29 since vehicle regulation/guideline cannot permit vehicle to break traffic rules.

**OE**: Alternative model merging the DE and JP model

**OE**: 5.2.4. The activated system shall be able to handle in a safe way the presence in the same lane of bring the vehicle to a complete stop behind a stationary vehicle, a stationary road user or a blocked lane of travel to avoid a collision. This shall be ensured up to the maximum operational speed of the system.

**OE**: 5.2.5. The activated system shall detect the risk of collision in particular with another road user ahead or beside the vehicle, due to a decelerating lead vehicle, a cutting in vehicle, a vehicle proceeding in the opposite direction or a suddenly appearing obstacle and shall automatically perform appropriate maneuvers to minimize risks to safety of the vehicle occupants and other road users.

### Any differences with ALKS low speed which need particular consideration?

**JP**: No need to modify UNR157 text because compliance to speed limits is covered by "traffic rule requirement".

**OICA/CLEPA**: Agree with Japan. This is covered by traffic rules. We understand this to be the case even with the current ALKS provisions, because the system has to comply with the traffic rules related to IDTs, and even though they do not occur frequently, in some areas speed limits below 60km/h do exist. So this should already be covered by the existing UNR157 text.

Clear: OK. But still maybe text for speed sign recognition?

### Scenario (e.g. cut-in) and scenario parameters as defined currently in UN 157 appropriate for higher speeds (> 60 km/h)

**DE**: No change proposed on cut-in/cut-out decelerating front vehicles.

**EC**: Alternative model merging the DE and JP model

**JP**: If some CPs propose to change the requirement completely (e.g. EC proposal), that proposal should be discussed firstly in FRAV.

**OICA/CLEPA**: believes the identical relevant scenarios are applicable also for speeds up to 130km/h. The parameters for the test cases will vary, but as they are described in a flexible manner, no amendments are necessary.
### 5.2.2.3 Pedestrian scenario

<table>
<thead>
<tr>
<th>Topic</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Should Appendix 3 to Annex 4 be replaced?</td>
<td>(JP) Current Appendix 3 to Annex 4 is important to assess the human driver level. Therefore, Japan suggests to keep current Appendix 3 with amendment (e.g. speed extension). If other CP requests to add other requirement, we can discuss to add it as another Appendix or something else. (OICA/CLEPA) believes a replacement of Appendix 3 to Annex 4 (recently repositioned to be Annex 3) does not need to be replaced.</td>
</tr>
<tr>
<td>Is it necessary to consider situations where lane marking is not visible?</td>
<td>(JP) The function of evasive emergency manoeuvre should be optional (i.e. not mandatory but may be fitted). If the function of evasive emergency manoeuvre is fitted, it is necessary that the function can only be activated when the braking is not capable of avoiding accidents. (OICA/CLEPA) In principle, the ALKS should be permitted to cross lane markings in a safe manner during an evasive maneuver. The assumption that an evasive maneuver should only be permitted when a collision cannot be avoided by braking goes against normal driving behavior. When there is sufficient free space no other driver following behind would expect the ALKS vehicle to brake to standstill when an obstacle could be safely steered around.</td>
</tr>
<tr>
<td>Is it necessary to consider situations where lane marking is not visible?</td>
<td>(OICA/CLEPA) There are two different requirements related to pedestrian currently: collision avoidance with a pedestrian inside the lane and collision avoidance with a pedestrian crossing into the lane. While a collision with a pedestrian inside the lane shall be avoided up to the maximum operational speed, this approach cannot be applied similarly to a crossing pedestrian. In order to achieve collision avoidance with a crossing pedestrian at 130 km/h the ALKS would need to start decelerating when the pedestrian is still several meters away from the lane. The risk of false activations and their potential negative effects would far outweigh the safety benefit. While collision avoidance may not always be reasonably achievable, the manufacturer will implement strategies to lower the risk, e.g. reducing the vehicle speed when a pedestrian is detected near the lane or moving the vehicle to the opposite side of the lane to create more distance.</td>
</tr>
<tr>
<td>What would be the boundary between dense traffic and free driving with regard to whether a Lane Change capability is required?</td>
<td>(JP) The function of evasive emergency manoeuvre should be optional (i.e. not mandatory but may be fitted). If the function of evasive emergency manoeuvre is fitted, it is necessary that the function can only be activated when the braking is not capable of avoiding accidents. (OICA/CLEPA) In principle, the ALKS should be permitted to cross lane markings in a safe manner during an evasive maneuver. The assumption that an evasive maneuver should only be permitted when a collision cannot be avoided by braking goes against normal driving behavior. When there is sufficient free space no other driver following behind would expect the ALKS vehicle to brake to standstill when an obstacle could be safely steered around.</td>
</tr>
<tr>
<td>What would be the boundary between dense traffic and free driving with regard to whether a Lane Change capability is required?</td>
<td>The boundary is understood with regard to whether it is permitted to use any lane or restricted to a certain lane (e.g. slowest available lane).</td>
</tr>
<tr>
<td>During evasive emergency maneuvers, is it permitted to cross lane markings?</td>
<td>(JP) The function of evasive emergency manoeuvre should be optional (i.e. not mandatory but may be fitted). If the function of evasive emergency manoeuvre is fitted, it is necessary that the function can only be activated when the braking is not capable of avoiding accidents. (OICA/CLEPA) As there is only little available space in the ego lane when steering around an obstacle and aiming to keep a minimum lateral distance to that obstacle, an evasive maneuver should also be permitted to cross lane markings.</td>
</tr>
</tbody>
</table>
**Lane changes**

<table>
<thead>
<tr>
<th>1. Type of lane changes/scenarios for lane changes</th>
<th>2. Different types of lane change as defined (nominal, during MRM and evasive)?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Note:</strong> different types of lane change as defined (nominal, during MRM and evasive)?</td>
<td><strong>JP:</strong> during MRM, &quot;evasive manoeuvre,&quot; &quot;regular lane change&quot; should be clearly differentiated (see UNR157-02-06). (OICA/CLEPA): Description of different lane change/lane crossing described in UN157-02-06. Industry believes MRM and regular lane changes could be addressed on the basis of one set of provisions with slightly different parameters for the assessment of a critical situation. Additionally separate provisions for an evasive manoeuvre crossing lane markings should be introduced.</td>
</tr>
</tbody>
</table>

**What are the items that need to be strengthened when compared to ACSF category C?**

| JP [REGULAR] Lane change during normal driving (not emergency situation) should consider the situation around the ego vehicle including forward and side (including 2 lane next). These requirements should be discussed in FRAV. Note: Detection of forward and side are not required in ACSF provisions. MRM: The requirements for lane change during MRM should be based on ACSF category C (can be based on category E but the requirements are not yet specified). Evasive: The requirements for evasive manoeuvre is difficult to define because the impact of secondary accident (i.e. collision to vehicle passing the next lane) should be considered. The function of evasive emergency manoeuvre should be optional (i.e. not mandatory but may be fitted). If this function of evasive emergency manoeuvre is fitted, it is necessary that the function can only be activated when the braking is not capable of avoiding accidents. |

**What would be the boundary between dense traffic and free driving with regard to whether a Lane Change capability is required?**

| OICA/CLEPA: We can group the different lane changes during MRM and nominal. Evasive is during an emergency maneuver. Regular: Lane change timing should be permitted to be flexible in accordance with local traffic rules no need to define distances to the front, as the ALKS will need to fulfill collision avoidance requirements also in the target lane. MRM: Parameters for a critical situation should be revised under the assumption that the emergency situation has already been indicated to other road users through the hazard warning lights it should be considered that the lane change is hard shoulders not wide enough to fit the entire vehicle, so the manoeuvre should not require to fit the vehicle fully into the new lane as is currently the case for lane change according to Cat. C Evasive steering: the definition of "sufficient free space" is most relevant, as if the gap required is too large, evasive steering will never be possible, while at the same time other traffic participants should not be "scared" by such a manoeuvre it should be considered if indication of such a manoeuvre to other road users is useful or harmful |

| OICA/CLEPA: The general approach to regulating ALKS lane changes should apply to any type of lane change. Individual parameters, e.g. distance to another vehicle following behind, that we deem to be safe might have to be adapted for individual scenarios. |

| UNR157-02-06 (OICA/CLEPA) | UNR157-03-08 (JP) | UNR157-04-08 (OICA/CLEPA) |

**Wouldn't changing lanes in traffic jam scenarios be different because the gaps are smaller?**

| OICA/CLEPA: The boundary between dense traffic and free driving with regard to whether a Lane Change capability is required |

| OICA/CLEPA: The boundary is understood with regard to whether it is permitted to use any lane or restricted to a certain lane (e.g. slowest available lane). |

<p>| UNR157-02-06 (OICA/CLEPA) |</p>
<table>
<thead>
<tr>
<th>Section</th>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Should criteria for permitting lane change be defined?</td>
<td>See above.</td>
</tr>
<tr>
<td></td>
<td>If so, what should be the criteria?</td>
<td><strong>(OICA/CLEPA)</strong> Situations, that require the ALKS to leave its own lane should be defined as proposed in column &quot;F&quot;. Additionally a regular lane change, should only be executed, when necessary.</td>
</tr>
<tr>
<td></td>
<td><strong>(OICA/CLEPA)</strong> proposal:</td>
<td>5.2.1. The activated system shall keep the vehicle inside its lane of travel and ensure that the vehicle does not cross any lane marking (outer edge of the front tyre to outer edge of the lane marking), except during manoeuvres described below/in paragraph xx. The system shall aims to keep the vehicle in a stable lateral position inside the lane of travel to avoid conflicting other road users.</td>
</tr>
<tr>
<td></td>
<td>Maneuvers where it is deemed justified that the ALKS crosses a lane markings are:</td>
<td>- A lane change manoeuvre as part of the lane change procedure</td>
</tr>
<tr>
<td></td>
<td>- A lane offset in order to form a corridor for emergency vehicles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- An evasive manoeuvre as part of the emergency manoeuvres</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- A lane offset manoeuvre during an MRM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In the lane change section, precendinds for lane change:</td>
<td>(JP) See above.</td>
</tr>
<tr>
<td></td>
<td>- There is a reason for a lane change (e.g. but not limited to, operation cannot be continued in the current lane (e.g. due to a blocked lane ahead, ending lane ahead), for the purpose of overtaking a slower moving vehicle, or to prevent violation of the obligation to drive in the slowest lane when possible or when the LCP is being undertaken as part of a MRM);</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>(OICA/CLEPA)</strong>: in principle supports the approach proposed by Germany. We should be careful not to over regulate AD Lane Change, as this could make the ALKS unable to adapt to changing traffic situations and behave unnaturaly with other road users.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>(DE)</strong>: Cat C basis. New thing: Other participants to have the chance to see the vehicles during 1.4 sec because the ALKS is fully responsible (compared to C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>(EC)</strong>: Alternative parameter of 4 sec of remaining TTC at the end of the LCP + clarifications</td>
<td></td>
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<tr>
<td></td>
<td><strong>(UK)</strong>: The system shouldn’t wait till the situation is critical before deciding to change lane.</td>
<td></td>
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<tr>
<td></td>
<td>OICA: Lane change covered by traffic rules. Parameter based on timings at the end of LCP difficult to work with.</td>
<td></td>
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<tr>
<td></td>
<td>UN157-04-08 (OICA/CLEPA)</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td>Need to define what is a safe lane change (parameters or general principles?)</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td><strong>(JP)</strong>: MBD lane change should be based on ACSF Cat C. <strong>(OICA/CLEPA)</strong>: in principle supports the approach proposed by Germany. We should be careful not to over regulate AD Lane Change, as this could make the ALKS unable to adapt to changing traffic situations and behave unnaturally with other road users. <strong>(DE)</strong>: Cat C basis. New thing: Other participants to have the chance to see the vehicles during 1.4 sec because the ALKS is fully responsible (compared to C) <strong>(EC)</strong>: Alternative parameter of 4 sec of remaining TTC at the end of the LCP + clarifications <strong>(UK)</strong>: The system shouldn’t wait till the situation is critical before deciding to change lane. <strong>(OICA)</strong>: Lane change covered by traffic rules. Parameter based on timings at the end of LCP difficult to work with.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>(JP)</strong>: See above.</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td><strong>(OICA)</strong>: A lane change that is performed while the ALKS is active is initiated by the system in a situation in which the system assesses the lane change to be necessary and possible. Instead of defining trigger conditions permitting/prohibiting lane changes under certain circumstances, we should define what we consider to be a safe lane change (i.e. with regard to manageable behavior by other traffic). What is considered to be safe can potentially vary depending on the preconditions, e.g. when the vehicle already indicated an emergency situation through active hazard warning lamps (MMR), surrounding traffic might be expected to react sooner. <strong>(OICA/CLEPA)</strong>: No need to define specific trigger conditions, as the individual parameters could be very well situation dependent. As long as we define what a safe lane change is, there is no need to define what causes the ALKS to change lanes in any more detail. <strong>(EC)</strong>: Should introduce a requirement to return to the slowest lane. Chair: already covered by 5.2.6.3 of the DE proposal</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>(SE)</strong>: Should introduce a requirement to return to the slowest lane. Chair: already covered by 5.2.6.3 of the DE proposal</td>
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</tr>
<tr>
<td></td>
<td><strong>(UK)</strong>: The system shouldn’t wait till the situation is critical before deciding to change lane.</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td><strong>(OICA/CLEPA)</strong>: No need to define specific trigger conditions, as the individual parameters could be very well situation dependent. As long as we define what a safe lane change is, there is no need to define what causes the ALKS to change lanes in any more detail.</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td><strong>(JP)</strong>: No special modification to present text is needed. <strong>(OICA/CLEPA)</strong>: Agree with Japan, that no special provisions for overrule during lane change are needed. The system is already permitted to adapt its thresholds to specific situations.</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td><strong>(JP)</strong>: No special modification to present text is needed.</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td>Shall driver interruption (over ride) during auto lane change be acceptable?</td>
<td><strong>(JP)</strong>: No special modification to present text is needed. <strong>(OICA/CLEPA)</strong>: Agree with Japan, that no special provisions for overrule during lane change are needed. The system is already permitted to adapt its thresholds to specific situations.</td>
</tr>
<tr>
<td></td>
<td>What kind of action should be required for override during auto lane change?</td>
<td><strong>(JP)</strong>: No special modification to present text is needed. <strong>(OICA/CLEPA)</strong>: Agree with Japan, that no special provisions for overrule during lane change are needed. The system is already permitted to adapt its thresholds to specific situations.</td>
</tr>
<tr>
<td></td>
<td>Is there any other additional requirement necessary for the Level 3 lane change function?</td>
<td><strong>(JP)</strong>: No special modification to present text is needed. <strong>(OICA/CLEPA)</strong>: Agree with Japan, that no special provisions for overrule during lane change are needed. The system is already permitted to adapt its thresholds to specific situations.</td>
</tr>
<tr>
<td>Section</td>
<td>Question/Requirement</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
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<td>-------------</td>
</tr>
<tr>
<td>1. Traffic situations</td>
<td>Any additional traffic situations which need extra attention and possibly need to be introduced?</td>
<td>(based on VMAD input)</td>
</tr>
<tr>
<td>2. MRM</td>
<td>During MRM, is it acceptable to stop within the lane? Or should lane change to the shoulder (lane change during MRM) be mandatory?</td>
<td>(JP) Having the function to change lane to the shoulder (lane change during MRM or MRM) should be mandatory for ADS with ODD higher than 60km/h because a stopped vehicle in highway without traffic jam is dangerous. (It is important to have the function of MRM lane change and it can be allowed if the MRM lane change is not achieved under some conditions. (e.g. when shoulder does not exist.) (OICA/CLEPA) ALKS was drafted under the assumption that the driver will always resume control within 10s, therefore making sure that the MRM will not lead the vehicle to standstill in case of a very severe medical emergency that leaves the driver physically unable to resume control. When driving at a speed of up to 130km/h it will take even longer to bring the vehicle to standstill. So what is the actual benefit of such a provision? (IC): Not always a hard shoulder. Systems with no lane change capability shall be able to operate in the slowest lane.</td>
</tr>
<tr>
<td>3. HMI</td>
<td>Any change/improvement to current HMI requirement given that more time will be spent without any intervention from the driver? Further harmonization needed?</td>
<td>(JP) We do not see any necessity to change the current requirement at this time. However, we should reflect on conclusions coming from PRAV and VMAD, if any. (EC): Need to review driver monitoring requirement as the driver will be longer out of the loop with higher speed/lane change?</td>
</tr>
<tr>
<td>4. Test, Audit &amp; In-service monitoring</td>
<td>Need to update DINAD/EDR requirements for speed extension/lane change?</td>
<td>(OICA/CLEPA): All relevant scenarios are in principle already addressed. If there is a need for an assessment of more specific situations these should be added under Annex 5 Part 5.5, as proposed in UNR157-02-08.</td>
</tr>
<tr>
<td>DINAD/EDR</td>
<td>Need to update DINAD/EDR requirements for speed extension/lane change?</td>
<td></td>
</tr>
<tr>
<td>5. OICA: Test of ADAS/EDR</td>
<td>Need to improve present test, especially track tests?</td>
<td>(OICA/CLEPA) As explained in UNR157-02-08 Industry believes all relevant aspects are already covered by the current ALKS provisions.</td>
</tr>
<tr>
<td>Test, Audit &amp; In-service monitoring</td>
<td>Need to improve present test, especially track tests?</td>
<td>UNR157-04-03r1 (Japan); UNR157-04-08 (OICA/CLEPA); UNR157-04-01f (Japanese)</td>
</tr>
<tr>
<td>6. OICA: Test of ADAS/EDR</td>
<td>Does the audit and in-service monitoring need to be enhanced?</td>
<td>(OICA/CLEPA): All relevant scenarios are in principle already addressed. If there is a need for an assessment of more specific situations these should be added under Annex 5 Part 5.5, as proposed in UNR157-02-08.</td>
</tr>
<tr>
<td>Test, Audit &amp; In-service monitoring</td>
<td>Does the audit and in-service monitoring need to be enhanced?</td>
<td></td>
</tr>
<tr>
<td>7. Lifetime consideration</td>
<td>How should vehicle configuration changes be taken into account by the approval process? Should they be part of the ODD? Should they be managed by the vehicle owner/driver if not detected by the ADS itself?</td>
<td>(JP) How will the system cope with different weather conditions depending on the road and the vehicle’s tire fitment during the vehicle’s lifetime? How will the system comply with local traffic rules in winter (mandatory special equipment on specific roads &amp; countries) without recognising its tires?</td>
</tr>
<tr>
<td>Test, Audit &amp; In-service monitoring</td>
<td>Lifetime considerations (weather and tear, load variation, different environmental conditions, replacement parts.</td>
<td></td>
</tr>
</tbody>
</table>
Clarifying Regulation

1. Emergency vehicles
   How should a vehicle respond to a sudden transition demand or shall it create a corridor?

   Does the system need to react to the presence of an enforcement officer (UK)?

2. Detectable collision
   What is a detectable collision (UK)?

   What is a significant collision (UK)?

   How should a vehicle respond? Is it with a brake delay or shall it create a corridor?

   Does a vehicle need to respond to other vehicles/enforcement vehicles, missing lane marking, load falling from truck (collision)?

   How to interpret emergency situations?

   How will the AWCS react?

   How are the different vehicle categories compared to passenger cars?

   How the HCVs parameters impacts the deceleration potential of heavier vehicle categories compared to passenger cars?

   How the deceleration potential of different load conditions, different permitted tyres fitted to the vehicle, different tyre age and external influences (e.g. varying grip conditions of the road) impacts the vehicle?

   What is the minimum distance required for the system to be activated?

   What is the impact of the ALKS on the braking distance?

   What is the impact of different speed values on the braking distance?

   What is the impact of different brake delay values on the braking distance?

   What is the impact of different control strategies on the braking distance?

   What is the impact of different load conditions on the braking distance?

   What is the impact of different permitted tyres on the braking distance?

   What is the impact of different tyre age on the braking distance?

   What is the impact of external influences (e.g. varying grip conditions of the road) on the braking distance?

   What is the impact of different dynamic test conditions on the braking distance?

   What is the impact of different control strategies on the braking distance?

   What is the impact of different road conditions on the braking distance?

   What is the impact of different traffic situations on the braking distance?

   What is the impact of different vehicle configurations on the braking distance?

   What is the impact of different environmental conditions on the braking distance?

   What is the impact of different weather conditions on the braking distance?

   What is the impact of different dynamic factors on the braking distance?

   What is the impact of different driving styles on the braking distance?

   What is the impact of different driver characteristics on the braking distance?

   What is the impact of different vehicle types on the braking distance?

   What is the impact of different vehicle weights on the braking distance?

   What is the impact of different vehicle sizes on the braking distance?

   What is the impact of different vehicle configurations on the braking distance?

   What is the impact of different vehicle speeds on the braking distance?

   What is the impact of different vehicle accelerations on the braking distance?

   What is the impact of different vehicle decelerations on the braking distance?

   What is the impact of different vehicle postures on the braking distance?

   What is the impact of different vehicle positions on the braking distance?

   What is the impact of different vehicle orientations on the braking distance?

   What is the impact of different vehicle states on the braking distance?

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### Minimum forward detection range (para. 7.1.1.)

| JP | The same requirements as M1 can be acceptable. |
| DE | The requirement for “7.1.1. Forward detection range” is also linked to the minimum following distance. The actual 46 m in R 157 ALKS are derived from an average braking performance calculation and the requirements for the minimum following distances of a M1 vehicle with a max. speed of 60 km/h. For other vehicles one of these two parameters may be above the required 46 m e.g. required min. following distance of 50 m for some vehicles and speeds within the range of 60 km/h. Therefore the min. forward detection range should be adjusted accordingly or the better solution would be to remove an explicit detection range completely. |
| OICA/CLEPA | The calculation of the 46 m is based on a speed of 80 km/h, a deceleration of 3.7 m/s² and delay of 0.5 s. These values are also usable for M2/M3/N2/N3. The minimum following distance was not a parameter in that discussion. |

**15/04/2021: OPEN** Validation/transferability of 46 m for M2/M3/N2/N3 vehicles needs confirmation. Linked to minimum following distance discussion and needs to be revisited in the next meeting.

### TTC Lane intrusion (para. 5.2.5.2.)

| JP | No need to modify UNR157. |
| DE | No modifications needed for the “TTC Lan intrusion” calculation for other vehicle categories. (The value describes more or less the criticality of a situation to be avoided and not directly a minimum braking performance of the ALKS vehicle. There is already far enough space in the calculation of the critical point in time and the reaction of the ALKS vehicle with the additionally introduced 0.72 s perception time for the safety of the other road users it is not justifiable, why an automated truck should be allowed to have more collisions (with even more potential consequences) than a passenger car. 6 m/s² in good road conditions is also manageable with a heavy truck. There is no need to go down to a relatively old requirement of a minimum deceleration performance of 5 m/s² for a modern truck that is built to drive automated.) |
| OICA/CLEPA | 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. |

**15/04/2021:**
1.) AGREED: Group conclusion no adjustments to formula needed due to width of trailer.  
2.) OPEN: Deceleration value needs checking and agreement, will be revisited in next meeting.
   - Value in UN R 157 currently for M1: 6 m/s² 
   - Proposal by OICA/CLEPA for N1: 6 m/s² and for M2/M3/N2/N3: 5 m/s² (supported by JP and EC) 
   - Concerns to industry proposal: formula describes expected capabilities of surrounding vehicles 
   - Ideas contributing to final solution: check other regulations, e.g. UN R 13 or UN R 131 for max breaking capabilities