List of open issues

Topic	Sub-topic	Open issue(s)	Positions	Status	Text proposal	Reference
Speed increase	1. Expected vehicle behaviour in nominal/complex situations?	**Para 5.2.3.3.: Minimum headway/safety distance**	(DE): For the minimum safety distance the approach was a linear scale with the DE requirement of 1.8 s at speeds of 80 km/h or above and a lower 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 (DE) / 2 sec (other CPs)). Interpolation between 60 km/h and 100 km/h. (JP)The table should not be deleted because the requirement like "the vehicle shall not cause collision" is ambiguous and considered differently between TSs, 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. Notwithstanding this requirement, appropriate following distance for complying other requirements (e.g. traffic rules, avoid collisions) should be maintained. (OICA/CLEPA): Industry believes the safety distance is influenced by the collision avoidance requirements. We hoped ALKS would establish an understanding that permitted the ALKS to drive at smaller following distances when able to provide the necessary level of safety and understood the table therefore to describe the actual minimum for ALKS, regardless of human-driver centered traffic rules. When this understanding is overturned, the table is of no benefit and could be removed, as safety is already ensured by the following provisions on collision avoidance with stationary obstacles.	TBD	DE text: *Present speed of the ALKS vehicle* (km/h) / (m/s)	*Minimum time gap* (s)	*Minimum following distance* (m) 7.2 / 2.0	1.0	2.0 10 / 2.78	1.1	3.1 20 / 5.56	1.2	6.7 30 / 8.33	1.3	10.8 40 / 11.11	1.4	15.6 50 / 13.89	1.5	20.8 60 / 16.67	1.6	26.7 **70 / 19.44**	**1.7**	**33.1** **80 / 22.22**	**1.8**	**40.0** **90 / 25.00**	**1.9**	**47.5** **100 / 27.78**	**2.0**	**55.6** **110 / 30.56**	**2.0**	**61.1** **120 / 33.33**	**2.0**	**66.7** **130 / 36.11**	**2.0**	**72.2**	ECE/TRANS/WP.29/GRVA/2020/32 (DE proposal) UNR157-02-07 +UNR157-02-07 (OICA/CLEPA) UNR157-03-04 (SE) UNR157-03-06 (EC) UNR157-03-08 (JP)
			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			
		5.2.7. String stability: No negative effect on traffic flow	EC: String stability general requirements as in 03-06 (OICA/CLEPA): Instability often results from driver expected behavior (e.g. driving off quickly, driving at fairly low following distance requiring strong system response to other road users). None of this applies to the ALKS. The ALKS "can take its time", driving off moderately, reacting less strong because of the higher following distances. Therefore we do not really see this as an issue that should explicitly be addressed. As long as the provisions on collision avoidance remain as they are there will be little freedom for lower following distances anyway. (JP)It is premature to implement this requirement because there are few vehicles with ADS in the market.	TBD	EC proposal: [5.2.7. The stability of the vehicle and driver system is a necessary condition that must be always met, provided that effects of unplanned events disturbing the safe motion are within reasonable limits. This shall be demonstrated in the assessment of the tests carried out in accordance with Annex 4 and 5 of this Regulation. 5.2.8. While following another vehicle the ALKS vehicle shall be string stable. This shall be demonstrated in accordance with Annex 5 of this Regulation.]	UNR157-02-07 (OICA/CLEPA) UNR157-03-06 (EC)
		7.1.1. :Minimum front detection range	Parameters to be used? (DE/FR): 5 m/s2 (modern vehicle braking capability under wet conditions). 0,5 sec reaction time. (SE/JP): 3,7 m/s2+0,5 sec reaction time (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.* (OICA/CLEPA): 3,7m/s2 were used out of context for ALKS and are the wrong basis as Industry has argued throughout the drafting process of ALKS already. The minimum detection range is that at which the system has to generate a control output at the very latest. Any system fulfilling the requirement will likely detect an obstacle sooner than that, because detection doesn't go from 0 to 100% from one meter to the next. In order to ensure safety, this value must be chosen to ensure the vehicle can safely be brought to standstill. As data shows that even on wet road surfaces the adhesion will permit a deceleration of 5m/s2 this is the appropriate threshold, because any maneuver requirering a higher deceleration would potentially exceed adhesion limits. That's why maneuvers requiring more than 5m/s2 are considered an Emergency Maneuver. Pedestrians on the road are an absolut exception when travelling at 130km/h and should therefore not be required to trigger a "comfort system reaction" as that would likely not be the case with a human driver either.	TBD	**A specified maximum speed above 60 km/h shall only be declared by the manufacturer, if the declared forward detection range fulfils the corresponding minimum value according the following table:** *Specified maximum speed* km/h / *Minimum forward detection range* m **0…60 / 46** **70 / 50** **80 / 60** **90 / 75** **100 / 90** **110 / 110** **120 / 130** **130 / 150** Section Break (Next Page) **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.**	ECE/TRANS/WP.29/GRVA/2020/32 (DE proposal) UNR157-02-07 + UNR157-04-08 (OICA/CLEPA) UNR157-03-04 (SE) UNR157-03-08 (JP)

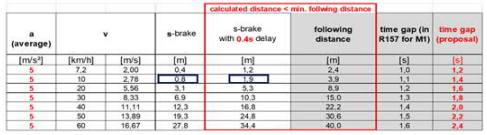
	Speed limits: varies in each country, how should they be treated under the Regulation? (JP).	(JP)No need to modify UNR157 text because compliance to speed limit is covered by "traffic rule requirement". (OICA/CLEPA): Agree with Japan. This is covered by traffic rules. we understand this to be the case even with the current ALKS provisions, because the system has to comply with the traffic rules related to the DDT, 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 ALKS text. Chair: OK. But still maybe test for speed sign recognition?	TBD	-	UNR157-02-07 (OICA/CLEPA) UNR157-03-08(JP)
	Line between type approval/traffic rules (JP: Are there any cases where following traffic law could cause danger? If so, how should we treat those cases in regulation)	Chair: Priority of safety over traffic rules?? (JP) This issue cannot be dealt with WP29 since vehicle regulation/guideline cannot permit vehicle to break 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 activaded 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 these 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?	TBD		UN157-04-08 (OICA/CLEPA)
	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	TBD		UNR157-02-06 (OICA/CLEPA)
2. Expected reaction of the vehicle to critical situations	**Any differences with ALKS low speed which need particular consideration?**		TBD		
	5.2.4. wrong way driver scenario	(EC) proposal 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 manoeuvres to minimize risks. (support EC proposal.). "Appropriate manoeuvre" should be as safe as or better than competent and careful human driver.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 requireing the issues that should be handled in a safe way.	TBD	5.2.4. The activated system shall be able to 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. (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 , a passable or unpassable obstacle [debris, lost cargo, etc.], or a blocked lane of travel to avoid a collision. This shall be ensured up to the maximum operational speed of the system. (EC)5.2.5. 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 manoeuvres to minimize risks to safety of the vehicle occupants and other road users.	UNR157-03-06 (EC)
		(OICA/CLEPA) If "wrong way driver" is considered a scenario to be assessed this should be added to section 5.3. of Annex 5, because there is no clear pass/fail criteria. While braking is usually an appropriate response, an attempt at evasive steering could potentially lead to an even more devastating accident, when vehicles collide at a small overlap or when both vehicles steer to the same direction.			UN157-04-08 (OICA/CLEPA)
	Scenarios (e.g. cut-in) and **scenario paramaters** as defined currently in UN R 157 appropriate for higher speeds (> 60 km/h)?	(DE) No change proposed on cut-in/ cut-out.deccelerating 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 identified 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.	TBD	See UNR157-03-06 (EC)	UNR157-03-06 (EC)

		Should Appendix 3 to Annex4 be replaced?	(JP) Current Appendix3 to Annex4 is important to assess the human driver level. Therefore, Japan suggests to keep current Appendix3 with amendment (e.g. speed extension). If other CP requests to add other requirement, we can discuss to add it as other 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.	TBD		UN157-04-08 (OICA/CLEPA)
		5.2.2.3 Pedestrian scenario: To what level should pedestrian **crossing** be covered? (it could be difficult to avoid a collision in a high-speed area but what should be the level required under the Regulation?) (JP)	(DE) Focus was to garantee pedestrian collision avoidance/mitigation up until 60 km/h. Does not mean that standing pedestian should not be managed. (JP)Collision to a pedestrian in the same lane shall be avoided. ADS should avoid collision in front of the ego vehicle as safe as a human driver. If necessary, we can accept to discuss amendments to current test procedure from the point of view above. Japan is discussing internally the case in which a pedestrian is standing beside the lane. Japan will provide proposal at the following SIG.	TBD		ECE/TRANS/WP.29/GRVA/2020/32 (DE proposal) UNR157-03-08 (JP)
			OICA/CLEPAThere is two different requirements related to pedestrians currently: - collision avoidance with a pedestrian inside the lane - 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 130km/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 by 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.			UN157-04-08 (OICA/CLEPA)
		Is it necessary to consider situations where **lane marking is not visibl**e?	(JP)No need to modify UNR157 text because it is obvious that the vehicle should keep control until the transition to the driver even if the lane marking is disappeared suddenly. (During MRM, the case when the lane marking is not visible is already described (5.5.1.).)	TBD	(Current ALKS text) 5.4.4.1. In case the driver is not responding to a transition demand by deactivating the system (either as described in paragraph 6.2.4. or 6.2.5.), a minimum risk manoeuvre shall be started, earliest 10 s after the start of the transition demand.	UNR157-03-08 (JP) UN157-04-08 (OICA/CLEPA)
			(OICA/CLEPA)ALKS was written in the sense that as long as it is defined what safe operation and safe transition is, there is no need to regulate behavior related to different system boundaries. Therefore "missing lane markings" do not need to be specifically addressed. Additionally Annex 5, Par. 5.3. (g) already assesses the system behavior in case of faded/erased/hidden lane markings.			UN157-04-08 (OICA/CLEPA)
		Is evasive emergency manoeuvre required for higher speed? Distinction < 80 km/h and above?	(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.	TBD		
			(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.			UN157-04-08 (OICA/CLEPA)
		What would be the boundary between dense traffic and free driving with regard to whether a Lane Change capability is required?	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).	TBD		UNR157-02-06 (OICA/CLEPA)
		During evasive emergency manoeuvre, **is it permitted to cross lane marking**?	(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.	TBD		
			(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.			UN157-04-08 (OICA/CLEPA)

Lane change	1. Type of lane changes/scenario for lane changes	Shall **different types of lane change** be defined (nominal, during MRM and evasive)?	(JP) "during MRM", "evasive manoeuvre", "regular lane change" should be clearly differenciated. (see UNR157-02-05) (OICA/CLEPA): Description of different lane change/lane crossing described in UN157-02-06. Industry believes MRM and regular lane changes could be adressed 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 maneuver crossing lane markings should be introduced.	TBD		UNR157-02-05 (JP) UNR157-02-06 and UNR157-02-08(OICA/CLEPA)
		What are the items that need to be strengthened when **compared to ACSF category C**?	(JP)[REGULAR] Lv3 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 Lange change during MRM should be discussed 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 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.	TBD		UNR157-03-08 (JP)
			(OICA/CLEPA): We can group the difference lane changes during MRM and nominal. Evasive is during an emergency manoeuvre **Regular:** - Lane change timing should be permitted to be flexible in according 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:** - Paramters for a critical situation should be revisited 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 can be hard shoulders not wide enough to fit the entire vehicle, still moving off the live lane of traffic would be beneficial, 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			UN157-04-08 (OICA/CLEPA)
		Wouldn't changing lanes in traffic jam scenarios be different because the gaps are smaller?	(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)
		What would be 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).	TBD		UNR157-02-06 (OICA/CLEPA)

2. Rerequirement for a safe lane change	Should criteria for permitting lane change be defined? If so, what should be the criteria?	(JP) See above (OICA/CLEPA): Situations, that require the ALKS to leave its own lane should be defined as proposed in column "F". Additionally a regular lane change, should only be executed, when necessary.	TBD	(OICA/CLEPA) proposal: 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 aim to keep the vehicle in a stable lateral position inside the lane of travel to avoid confusing other road users. **Manoeuvres where it is deemed justified that the ALKS crosses a lane markings are:** **• A lane change manoeuvre as part of the lane change procedure** **• A lane offset in order to form a corridor for emergency vehicles** **• [An evasive manoeuvre as part of the emergency manoeuvre]** **• A lane offset manoeuvre during an MRM** In the lane change section, preconditions for lane change: **(f) 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);**	UN157-04-08 (OICA/CLEPA)
	Need to **define what is a safe lane change** (parameters or general principles?)	(JP) MRM lane change should be based on ACSF Cat C. (OICA/CLEPA): 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. (DE): Cat C basis. New thing :Other participants to have the chance to see the vehicles during 1,4 sec becasue the ALKS is fully responsible (compared to C) (EC): Alternative parameter of 4 sec of remaining TTC at the end of the LCP.+ clarifications UK proposal on MRM based on DE proposal with some adaptation. OICA: How much we want to describe the critical situation. Evasive: important is the free space. defintiion+requirements to be provided by OICA by the (UK): The system shouldn't wait till the situation is critical before deciding to change lane. (OICA): Lane change covered by traffic rules. Parameter based on timings at the end of LCP difficult to work with.	TBD		ECE/TRANS/WP.29/GRVA/2020/33 (DE proposa) UK proposal on lane change for MRM UNR157-03-06 (EC)
	How would we ensure that the ODD conditions are still met in the new lane?	(OICA/CLEPA): ALKS would still have to fulfill all general ALKS requirements in the new lane (e.g. with regard to collision avoidance or operation during a transition demand). So the system would have to ensure that it can continue to operate in the lane that a lane change is performed into	TBD		UNR157-02-06 (OICA/CLEPA)
	Need to define triggering conditions for lane change. Should aim to prevent erratic lane change. (NO)	(JP) See above. (OICA CLEPA): 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 (MRM), surrounding traffic might be expected to react sooner. (OICA CLEPA) 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. (SE) Should introduce a requirement to return to the slowest lane. Chair: already covered by 5.2.6.3 of the DE proposal	TBD		UNR157-02-06+ UN157-04-08 (OICA/CLEPA)
	Shall driver interruption (over ride) during auto lane change be acceptable? What kind of action should be required for override during auto lane change? (JP)	(JP)No special modification to present text is needed. (OICA/CLEPA) Agree with Japan, that no special provisions for override during lane change are needed. The system is already permitted to adapt its thresholds to specific situations.	TBD		
	Is there any other additional requirement necessary for the Level 3 lane change function? (JP)		TBD		

		Is it necessary to decide a **minimum detection range for directions other than forward** (side, diagonal)? (JP)	(JP) The requirement of MRM lane change can refer the requirement of risk mitigation function (RMF), that is provisionally based on ACSF Cat C, which is under discussion in ADAS-TF. Regarding regular lane change, the requirement should be discussed in FRAV. (OICA/CLEPA): The detection ranges as currently proposed by Germany are reasonable to address lane changes during ALKS operation but would support the idea of not defining a sensing range and leaving it up to the strategy.	TBD		UN157-04-08 (OICA/CLEPA)
Both	1. Traffic situations	Any **additional traffic situations** which need particular attention and possibly need to be introduced? (based on VMAD input)	(OICA/CLEPA): All relevant scenarios are in principle already addressed. If there is a need for an asessment of more specific situations these should be added under Annex 5 Par. 5.3. as proposed in UNR157-02-08	TBD		UN157-04-08 (OICA/CLEPA)
	2. MRM	During MRM, is it acceptable to stop within the lane? Or **should lane change to the shoulder (lane change during MRM) be mandatory**?(JP)	(JP) Having the function to change lane to the shoulder (lane change during 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 that 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 unless 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? OICA: not always a hard shoulder. Systems with no lane change capability shall be able to operate in the slowest lane.	TBD		UN-O4-03-r1 (Japan) UN157-04-08 (OICA/CLEPA)
	3. HMI	Any change/improvement to current **HMI requirement** given that more time will be spent without any intervention from the driver? Further harmonization needed?	(JP) We do not see any necessity to change the current requirement at this time. However, we should reflect on conclusions coming from FRAV 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 functions? (OICA/CLEPA) believes the HMI provisions as they currently are, are appropriate also for higher speeds/lane changes. The driver will take equally long to resume control, and the only safety relevant information to the driver is the system status and transition demand. We should ask ourselves what aspects are safety relevant, and not what we would like the vehicle to tell us just because it would be nice to know.	TBD		UN-O4-03-r1 (Japan) UN157-04-08 (OICA/CLEPA)
	DSSAD/EDR	Need to update DSSAD/EDR requirements for speed extension/lane change?				
	4. Test, Audit & In-service monitoring	During Type Approval, what type of tests should be conducted or provided by the documentation? (**Should current requirements be further clarified?**) (JP)	(JP) We do not see any necessity to change the current requirement at this time. However, we should reflect on conclusions coming from VMAD if any. (OICA/CLEPA) As explained in UNR157-02-08 Industry believes all relevant aspects are already covered by the current ALKS provisions.	TBD		Proposal from OICA/CLEPA on tests in GRVA?
		Need to improve present test, especially **track tests**?	(JP) We do not see any necessity to change the current requirement at this time. However, we should reflect on conclusions coming from VMAD if any. (EC): Need for new test for lane change+wrong way driver? (OICA/CLEPA): The only addition necessary is tests for lane changes, which Industry already proposed in GRVA/2021/04. Other than that Industry believes the current test section already adressess all relevant scenarios and as there are no specific parameters defined, any potential scenario is covered.	TBD		UNR157-03-06(EC) UNR157-04-08 (OICA/CLEPA) UNR157-04-03r1(Japan)
		Does the **audit and in-service** monitoring need to be enhanced?	(JP) We do not see any necessity to change the current requirement at this time. However, we should reflect on conclusions coming from VMAD if any. (EC): Need to update audit and in-service montoring requirements for higher speed/lane change? See proposals to update information document (not linked to LC/Higher speed however) (OICA/CLEPA) As explained in UNR157-02-08 Industry believes all relevant aspects are already covered by the current ALKS provisions.	TBD		UNR157-03-06, UNR157-04-05, UNR157-04-06 and UNR157-04-09(EC) UNR157-04-08 (OICA/CLEPA) UNR157-04-03r1(Japan)
	Lifetime consideration (wear and tear, load variation, different environmental conditions, replacement parts,		(F): 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 ? And then how should the vehicle owner/driver be informed of that ? How will the system cope with different grip 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 & countries) without recognizing its tires?	TBD		UNR157-02-04 (F)

	different update of the vehicles, change due to traffic rules such as winter tyres)		OICA/CLEPA: In responses to FR questions on lifetime considerations, there are responsibilities (e.g. appropriate tyres, snow tyres, proper load, load properly secured) that remain with the driver because the driver will have driven the vehicle manually before ALKS becomes active. Beyond that, ALKS needs to implement strategies to cope with reasonably expected changes in vehicle configuration (e.g. different load conditions, different permitted tyres fitted to the vehicle, different tyre age) and external influences (e.g. varying grip conditions of the road). What exactly these strategies are will be demonstrated to the Technical Service during Type Approval.			UNR157-03-07
Clarifying Regulation	1. Emergency vehicles	How should a vehicle respond? Is it with transition demand or shall it create a corridor?		TBD	2.5. "Unplanned event" is a situation which is unknown in advance, but assumed as very likely in happening, ~~e.g. road construction, inclement weather, approaching emergency vehicles, missing lane marking, load falling from truck (collision)~~ and which requires a transition demand. **This may include road construction, inclement weather, approaching emergency vehicles/enforcement vehicles, missing lane marking, load falling from truck (collision).** 5.1.2. The activated system shall comply with traffic rules relating to the DDT in the country of operation **including responding to emergency/enforcement vehicles**.	UNR-157-03-12 (OICA)
		Does the system need to react to the direction of an **enforcement officer**? (UK)		TBD		
	2. Detectable collision	What is a detectable collision? (UK)		TBD	5.1.1. … When the vehicle is involved in a ~~detectable~~ **significant** collision **with another road user while ALKS is active**, the ~~vehicle~~ **control strategy** shall be ~~brought~~ to **bring the vehicle to** a standstill. +Update Annex 5, Paragraph 5.2 (table) accordingly (replace "detectable" by "significant")	UNR-157-03-12 (OICA)
HDV ALKS below 60 km/h*		**Maximum deceleration value (para. 5.5.1.):** 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?	JP: 4m/s2 can be acceptable because no safety concern has been observed. (However, buses with standing passengers should require additional consideration.) OICA/CLEPA: The MRM in para. 5.5.1. requires a deceleration not greater than 4 m/s². That means a lower value is possible. The minimum brake performance required by R13 for service braking system is 5 m/s². A deceleration value of 4 m/s² reflects the expectations of the other traffic participants and therefore it is independent from the ego-vehicle. So there is no difference in the perception if a passenger car or a CV is decelerating. 15/04/2021: AGREED: Group concensus the value of 4 m/s2 as maximum deceleration value duing MRM also valid ifor HDV scope extenstion , therefore no amendment to paragraph 5.1.1. in UN-R 157 needed.	AGREED	*No need for new text.*	UNR-157-02-10 (OICACLEPA)
		Minimum following distance (para. 5.2.3.3.): 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.	JP: Minimum following distance should be calculated by the same method as M1 by useing HDV parameters(the distance with maximum deceleration). In favor to keep table in general. DE: The minimum following distances in the table for ALKS60 are defined according to traffic rules and reasonable deceleration values and not directly linked to the minimum performance of the service brake of a special vehicle category. If required, special provisions for the minimum safety distance exist for special vehicles in the national traffic rules (e.g. 50 m above 50 km/h in DE). The general requirement to avoid any collision remains valid, therefore no system is forced to only drive with the minimum safety distance if the braking performance might be too low. Values in the table need reconsidering and checking, if applicable in all countries. JRC: no need for table in general as this distance will in any case depend on the traffic situation and traffic rules and proposed instead a general requirement on safety distance keeping OICA/CLEPA: Suggestion to add a special column for M2/M3/N2/N3 in the tabel based on the follwoing approach: - Using a deceleration value of 5 m/s² (minimum performance of the service brakes in R13) for each speed value for the calculation - Using a brake delay of 0.4s (linear increase up to full brake performance --> 0.8s/2) for each speed value for the calculation - Ensuring that the minimum following distance is always greater than the calculated braking distance 15/04/2021: 1.) AGREED: Group consensus to keep approach using table for minimum following distance for the time being. 2.) OPEN: Values for minium following distance need confirmation and agreement, will be revisited in next meeting (OICA/CLEPA proposals UNR157-03-09 and UNR157-04-07: suggestion using 5 m/s2 and derive values)	TBD		**GRVA/2021/03 (OICA/CLEPA)** UNR-157-02-10 (OICA/CLEPA) UNR157-03-09 (OICA) UNR157-03-05 (DE) UNR157-03-08 (JP)

		Minimum forward detection range (para. 7.1.1.): for HDV and influence of vehicle dynamics for safety distance to the front/detection range.	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 46m is based on a speed of 60 km/h, a deceleration of 3.7 m/s² and delay of 0.5s. These values are also useable for M2/M3/N2/N3. The minimum following distance was not a parameter in that discussion. 15/04/2021: OPEN: Validity/transferability of 46 m for M2/M3/N2/N3 vehicles needs confirmation. Linked to minium following distance discussion and needs to be revisted in the next meeting.	TBD		
		TTC Lane intrusion (para. 5.2.5.2.): In the section about the cutting-in scenario, should the parameter "TTCLaneIntrusion" be modified, considering the width of HDVs compared to a passenger car?	JP: No need to modify UNR157. DE: No modifications needed for the "TTCLaneIntucion" calculation for other vehicle categories. (The value describes more a 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 revisted 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 capabilites of surrounding vehicles - Ideas contributing to find solution: check other regulations, e.g. UN R 13 or UN R 131 for max breaking capabilties	TBD		**GRVA/2021/03 (OICA/CLEPA)** UNR-157-02-10 (OICACLEPA)