Q&A ALKS Speed Increase and Lane Changes

ALKS Lane Change:

What types of lane changes are there?

- See OICA/CLEPA presentation “Overview_TypesOfLaneCrossing”

Do we need to define appropriate trigger conditions?

- 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.

Who initiates the lane change during ALKS operation?

- 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.

How would we ensure that the ODD conditions are still met in the new lane?

- 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.

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).

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

- 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.

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

- 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.

ALKS Speed Increase:

How will the proposed minimum safety distance to the front affect road capacity? And how can this effect be dealt with?

- The required safety distance to the front of an ALKS is much more dependent on the collision avoidance requirement we impose on the system than the permitted minimum distance according to Par. 5.2.3.3.
  So as long as we expect the ALKS to avoid a collision with a stopped vehicle ahead even after a late lane change of the lead vehicle, the vehicle will have to be operate at a significant safety distance to the vehicle in front.

Is string stability an issue for ALKS and should provisions be included to address this?

- 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.

If the permitted maximum operational speed was increased, the ALKS would have to be capable of detecting and reacting to speed limits.

- Yes, and 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.