

## Japan Proposal concerning ODD

### 1. Purpose of ODD

Before discussing the ODD definition or requirement, it is important to clarify the purpose of specifying ODD.

ODD is specified for the following two purposes:

- To limit the available operational range of the ADS, and thus verify the conformity to the standard within the range.
- To clarify the available operational range of the ADS and inform the user of the range, and thus request the user's responsive functions i.e. perception, decision, and control when it becomes outside of the range.

### 2. What ODD shall/shall not describe

ODD shall specify all conditions (e.g. road/geographic conditions, weather conditions, operation speed, driver's condition) in which the vehicle is designed to initiate a transition demand to the driver, except for the conditions specified below. ODD shall be definable, understandable, predictable, comparable and repeatable.

- Conditions with high risk of collision (obstacle detected, abrupt cut-in of the other vehicle, abrupt deceleration of the lead vehicle, etc.)

(Justification: (FRAV has not yet discussed but Japan consider it is obvious that)When a transition demand is initiated the vehicle shall continue to operate safely at least for a certain period of time (e.g. 10 seconds), and when there is a high risk of collision appropriate control shall be taken before the end of this period. This does not prevent the system from issuing a transition demand in the case of imminent collision risk.)

- Conditions such as an internal system failure which causes the system to continuously fail to operate normally

(Justification: Failure is a different concept separately treated from ODD)

### 3. Other specifications concerning ODD to be included in Document 5

In addition, the following specifications shall be included in Document 5. They do not need to be under the ODD Chapter.

- ADS shall meet the requirement within the range of ODD.
- All the conditions under which the vehicle shall initiate a transition demand to the driver shall be provided by the vehicle manufacturer, etc. In this case, it shall be clarified under

which of the following classifications each condition falls:

- Conditions causing ODD exit
  - Conditions with a high risk of collision (obstacle detected, abrupt cut-in of the other vehicle, abrupt deceleration of the lead vehicle, etc.)
  - Conditions such as an internal system failure which causes the system to continuously fail to operate normally
- 
- During ADS operation, when the system encounters the condition where it can no longer remain in its ODD, the system shall initiate a warning to request the driver to take control of the vehicle providing adequate time for reaction (i.e. transition demand). However, this requirement is not necessarily satisfied to the cases in which a warning cannot be provided adequately in advance (i.e. unplanned event) and while a warning is provided the system continues safe operation for a certain period of time (e.g. 10 seconds). The warning can only be terminated when the driver has taken control of the vehicle or MRM has been initiated.
  - During ADS operation, when the system encounters a condition which causes the system to fail to operate normally including an internal system failure, the ADS shall immediately initiate a transition demand to the driver. The request can only be terminated when the driver has taken control of the vehicle or MRM has been initiated.
  - When ADS is at risk of the system not satisfying its ODD or at risk of failing to operate normally, the ADS shall not start to be activated.
  - When ADS is at risk of failing to operate normally, the driver shall be informed of the condition through an optical warning.
  - The ODD shall be described in the user manual.
  - ADS shall detect all the ODD boundaries.

\*Text in blue is the text which, Japan considers, should be reflected as requirement.