Guideline regarding Safety Technology for Automated Vehicles [Outline]

国土交通省

* Promotes the development and commercialization of safe automated vehicles by prescribing safety requirements to be met by level 3 or 4 such vehicles as a guideline before the establishment of international standards

* Sets the world's first safety vision to realize automated driving and clarifies the significance of the development and commercialization of such vehicles

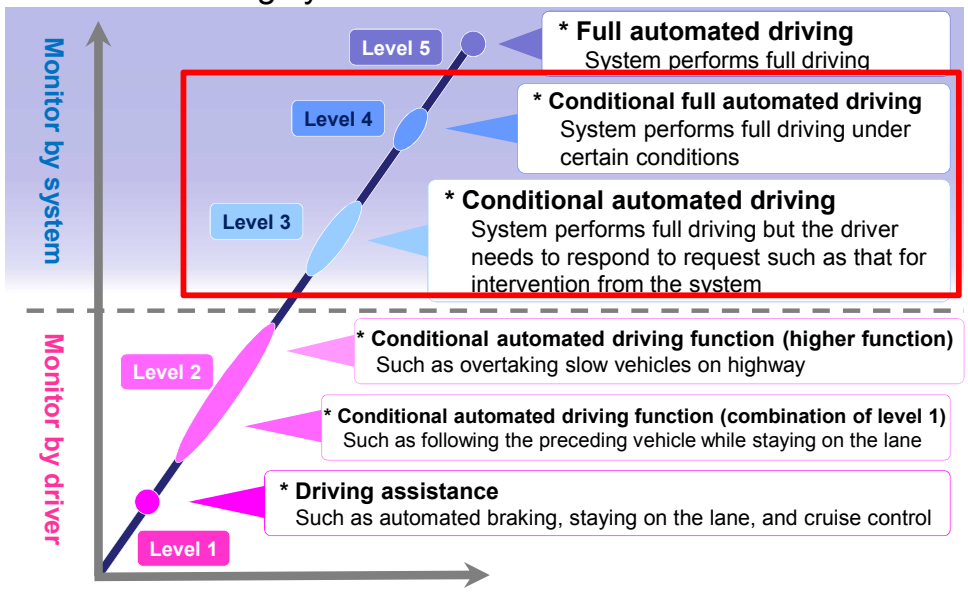
  Safety vision: *realize society where traffic accidents caused by automated driving systems resulting in injury or death become zero*

History

Dec 2017	Discussion started at the WG on Safety Measures for Automated Vehicles established under the Council for Vehicle Safety Measures
Apr 2018	Completion of the guideline by around the summer of 2018 was indicated in the Outline of System Improvement for Automated Driving (determined by IT Strategic Headquarters)
Jun 2018	Completion of the draft Guideline, public comment period began

Vehicles subject to the Guideline

Passenger cars, trucks, and busses with a level 3 or 4 automated driving system



Red frame shows the scope of this Guideline

* The Guideline will be reviewed as necessary based on the development of technology and international standards, etc.

Basic safety concept for automated vehicles

- To realize society where traffic accidents caused by automated driving systems resulting in injury or death become zero is set as a vision
- To ensure safety, vehicle safety to be met by automated vehicles is defined as "automated vehicle systems, under their operational design domain (ODD), shall not cause any traffic accidents resulting in injury or death that are rationally foreseeable and preventable" and vehicle safety requirements are established

10 safety requirements for automated vehicles

Automated vehicles shall meet the following requirements to ensure safety:

(i) Setting of ODD (ii) Safety of automated driving systems
(iii) Compliance with Safety Regulations, etc.
(iv) Human machine interface (with driver monitoring function, etc.)
(v) Installation of data recording devices (vi) Cybersecurity
(vii) Safety of vehicles used for unmanned driving services (additional requirement)
(viii) Safety evaluation (ix) Safety of in-use vehicles
(x) Information provision to automated vehicle users

10 safety requirements for automated vehicles

Automated vehicles shall meet the following safety requirements to ensure their safety

Vehicle safety item	Main requirements
(i) Setting of ODD	Set the operational design domain (specific design conditions related to the driving environment based on which an automated driving system operates properly: ODD) according to the performance of individual automated vehicles and use conditions to limit the driving environment and the way they are used
(ii) Safety of automated driving systems	- Ensure system safety by providing redundancy to control or sensor systems, etc. - Automatically stop a vehicle safely when it is difficult to continue automated driving, such as when the situation becomes outside of the set ODD, etc.
(iii) Compliance with Safety Regulations, etc.	- Comply with the existing Safety Regulations for Road Vehicles related to automated driving - Compliance with related international standards and regulations such as ISO is recommended.
(iv) Human machine interface (HMI)	Install HMI that has the following functions to notify the driver or passengers of the operation status of the automated driving system: - For level 3 automated vehicles, to monitor to see if the driver is ready to take over driving from the system and issue an alarm as necessary (driver monitoring system, etc.) - For level 4 automated vehicles, to inform the driver or passengers (a person responsible for operation) in advance that the system has determined that it is difficult to continue automated driving and will stop the vehicle automatically
(v) Installation of data recording devices	Have a device that records the operational status of the automated driving system, the status of the driver, etc.
(vi) Cybersecurity	Design and develop vehicles that take account of cybersecurity such as measures against automated vehicle hacking, etc. based on the most recent requirements on cybersecurity by the UN (WP.29) or other organizations
(vii) Safety of vehicles used for unmanned driving services (additional requirement)	For automated vehicles used for unmanned driving services (level 4), in addition to requirements (i) to (vi), have a camera that enables the operation control center to monitor the situation inside the vehicle, etc. and a function to automatically send a notification to the operation control center when the vehicle is stopped at emergency
(viii) Safety evaluation	Verify and confirm safety in advance by conducting simulations, and test track and road tests in adequate combination for rationally foreseeable hazardous events within the set ODD
(ix) Safety of in-use vehicles	Take measures such as maintenance (inspection) of automated vehicles and cybersecurity software update, etc. to ensure safety of in-use vehicles
(x) Information provision to automated vehicle users	Take measures to inform the users of automated vehicles how to use the system, scope of ODD, functional limitations, etc.