Current Trend and NPA Initiatives Regarding Automated Driving

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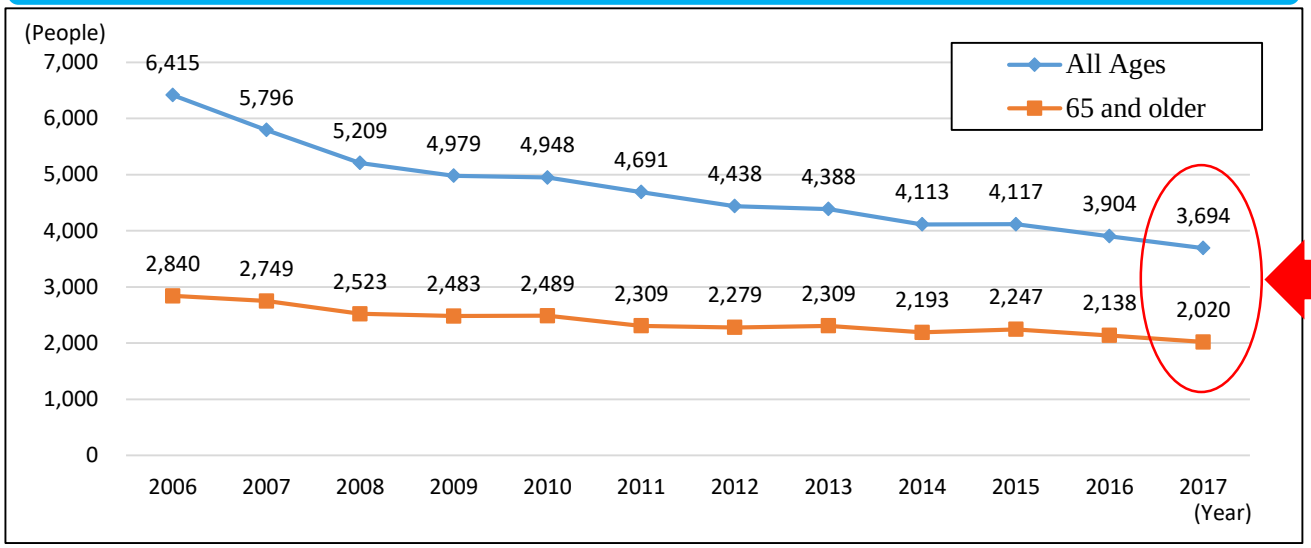
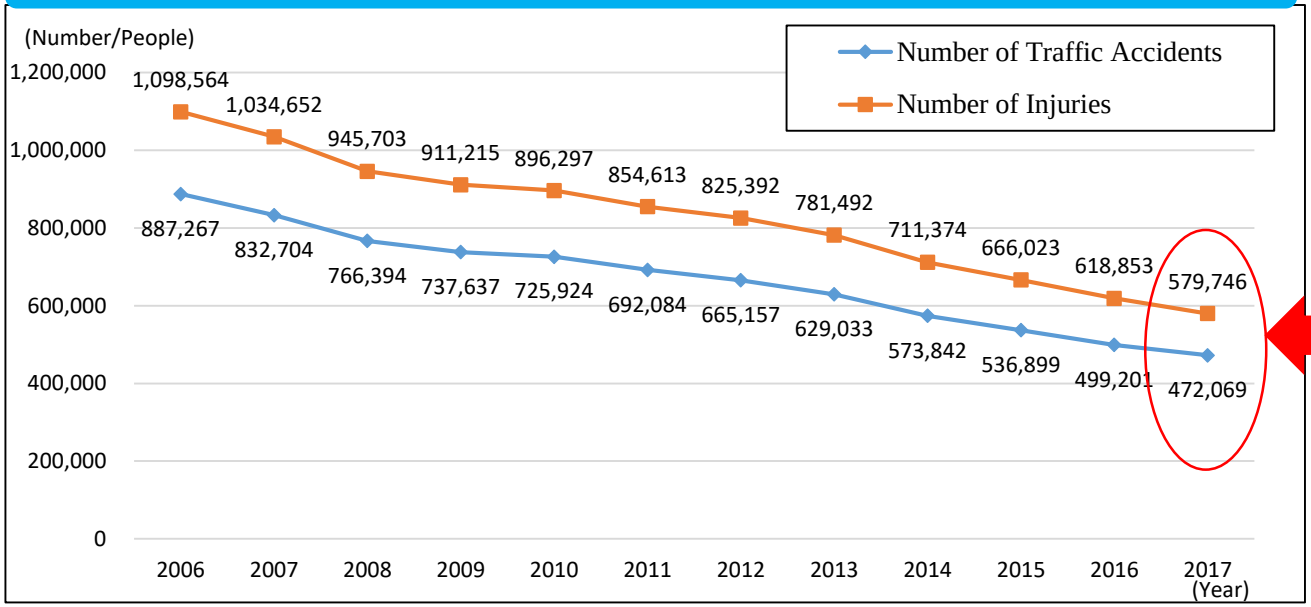
Contents

1 Current Road Traffic Situations in Japan

Number of Traffic Accident Fatalities



Number of Traffic Accidents and Injuries



"Key Points in 2017"

〔All ages〕

The lowest number since records began in 1948 (-210 from 2016)

〔65 and older〕

Accounted for 54.7% of all accidents

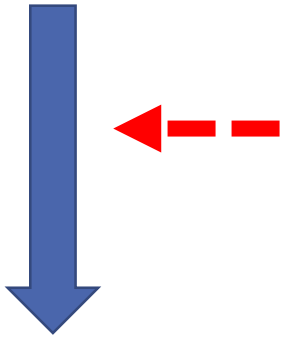
〔Number of accidents〕

13th straight year of decline (-39,107 from 2016)

〔Number of injuries〕

13th straight year of decline (-27,132 from 2016)

- **10th Fundamental Traffic Safety Program (FY2016- FY2020)**



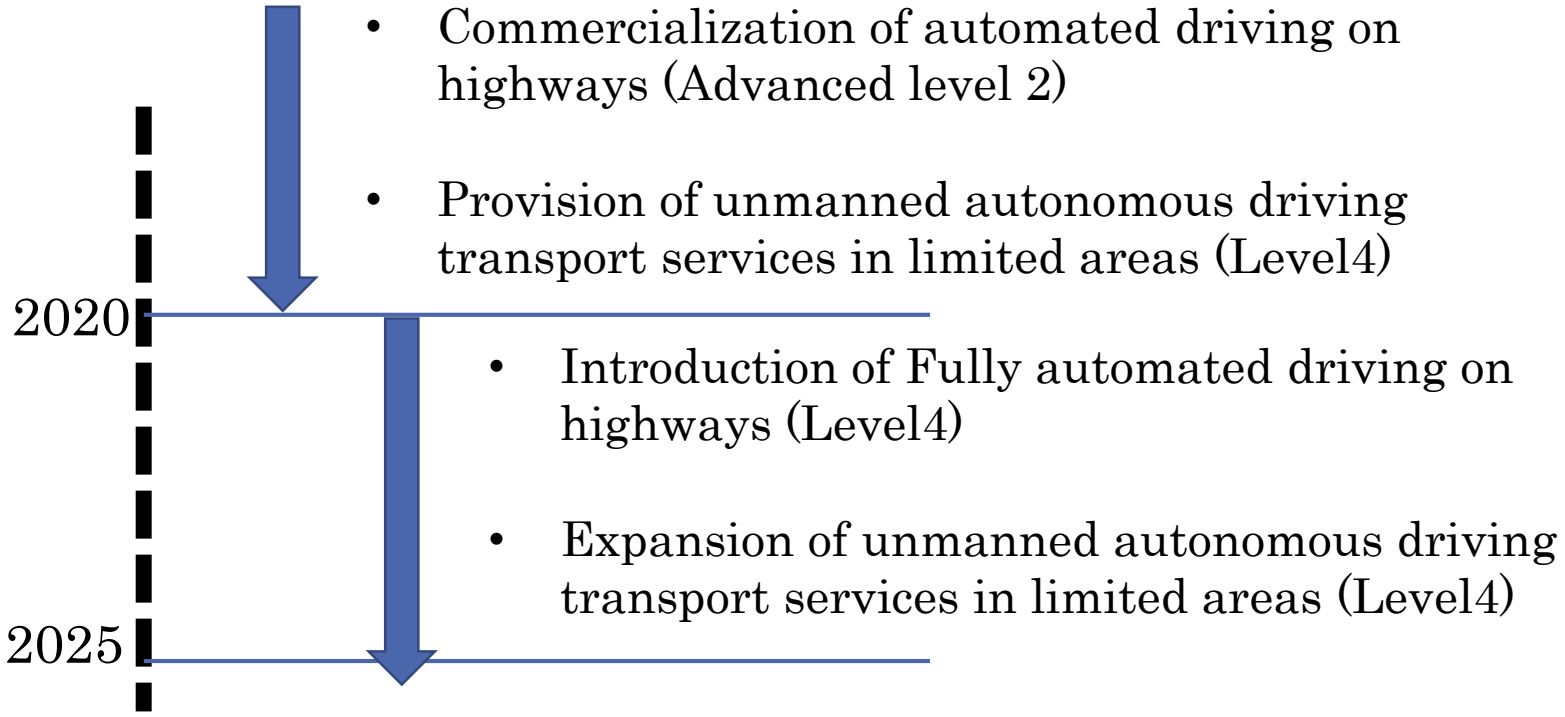
Introduction of advanced technologies in addition to conventional countermeasures

[Objectives]

- To attain the safest road traffic in the world, by reducing the annual number of fatalities within 24 hours after each traffic accident to 2,500 or less.

- To reduce the annual number of causalities to less than 500,000 persons.

● Public-Private ITS Initiative/Roadmaps 2017



- ➢ **Comprehensive policy for development of institutions will be set in FY2017**
- ➢ **National project on practical experiment of automated driving technologies will be launched in the fall of 2017**

<Levels of Automation>

- Public-Private ITS Initiative/Roadmaps 2017 adopted SAE J3016 (Sep 2016)

Levels	Role of drivers/systems	Monitoring Responding to events
Drivers exercise all or part of driving task		
SAE Level 0 No Driving Automation	• Drivers perform the entire driving task.	Driver
SAE Level 1 Driver Assistance	• Automated driving systems preform either the longitudinal or the lateral driving tasks.	Driver
SAE Level 2 Partial Driving Automation	• Automated driving systems perform both the longitudinal and the lateral driving tasks.	Driver
Automated driving systems resume all of driving task		
SAE level 3 Conditional Driving Automation	• Automated driving systems perform all driving tasks in ODD. • Drivers are expected to respond to interference requests by systems in appropriate manner in the situations which the systems cannot handle.	Systems (Driver, in the situation which system cannot handle)
SAE Level 4 High Driving Automation	• Automated driving systems perform all driving tasks in ODD. • Drivers are not expected to respond to interference requests by systems in the situations which the systems cannot handle.	Systems
SAE Level 5 Full Driving Automation	• Automated driving systems perform all driving tasks • Drivers are not expected to respond to interference requests by systems in the situations which the systems cannot handle.	Systems

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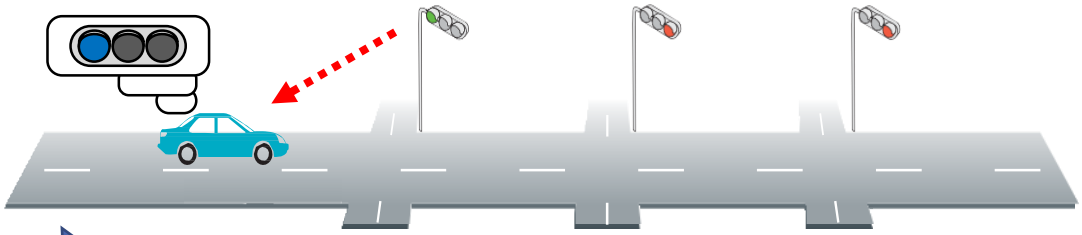
■ TSPS (Traffic Signal Prediction Systems)

TSPS encourage safe and eco-friendly driving by providing drivers with driving support information (ex. The color of traffic signals)

Using infrared beacon



Information
- The place of crossroads
- The maximum speed regulation
- The color of traffic signals
- Signal time span etc.

Incorporate 700MHz band ITS road side unit

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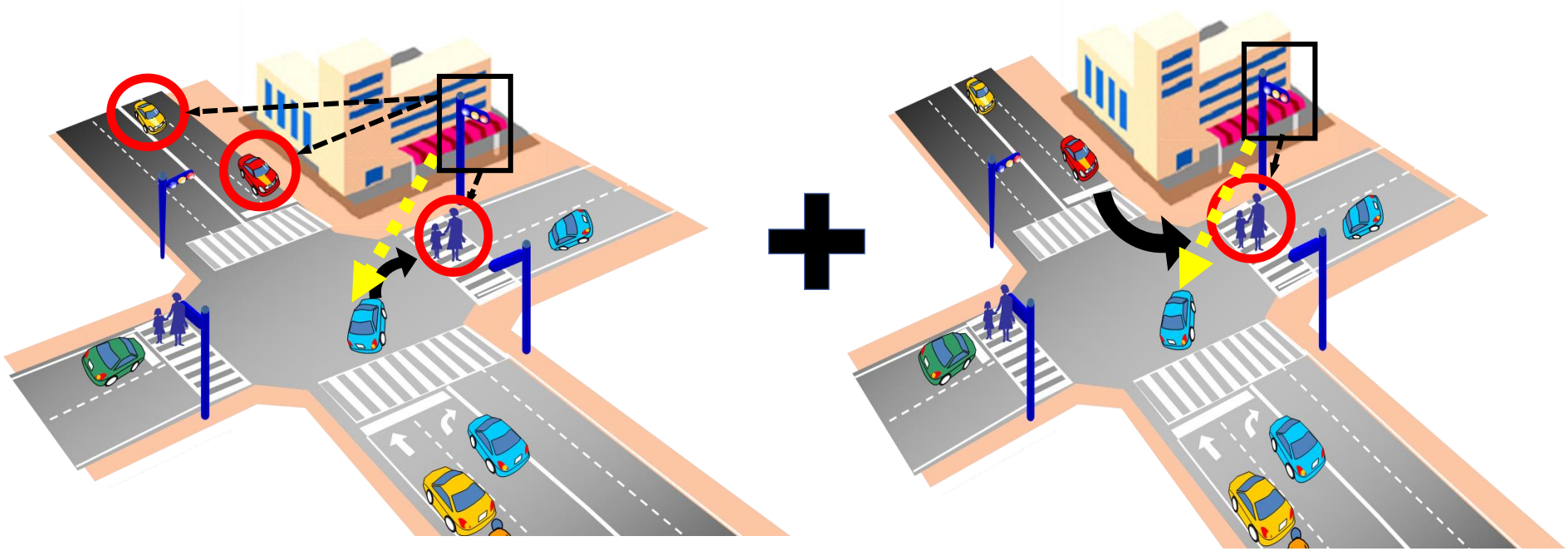
■ DSSS (Driving Safety Support Systems)

DSSS grasp traffic situations of an area which is hard to see from driver's position using roadside sensors and alert drivers via on-board units and thereby prevent traffic accidents caused by careless oversight such as inattentive driving.



● 1949 Convention on Road Traffic (Geneva Convention)

- 97 Contracting Parties including Japan
- There are articles premising human driver

  Ex. Article 8

  1. Every Vehicle or combination of vehicles proceeding as a unit shall have a driver.

It is necessary to explore how to ensure consistency between the Conventions and driverless-vehicles.

UNECE Global Forum for Road Traffic Safety (WP1)

- Japan was an observer since Sep 2014
- Became a full-Participant in Feb 2016

Informal Group of Experts on Automated Driving (IGEAD)

- Established in WP1 71st session (Oct 2015)
- 8 meetings as of now

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● Road Traffic Act in Japan

- There is no provision which explicitly states that the driver is human being.
- But some provisions assume that the driver is a natural person.

Ex. Article 70 (Responsibilities of Safe Driving)

The driver of a vehicle shall operate its equipment, including but not limited to its steering wheel and brakes, in a consistent manner and shall drive the vehicle at a speed and in a manner that pose no hazard to others in consideration of such situations as roads, traffic and the vehicle.

- ➢ Testing of all levels of AD technologies are permissible under existing Road Traffic Act if there is a driver who can take over the control in the event of emergency.
- ➢ As for SAE level 3 and over, further discussion is necessary.

  How to establish the definition of the “driver”?

  How to ensure the safety?

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4 Addressing International and National Legal Issues Regarding AD

- Published two sets of guidelines for testing of AD on public roads

■ Guidelines for Public Road Testing of Automated Driving Systems

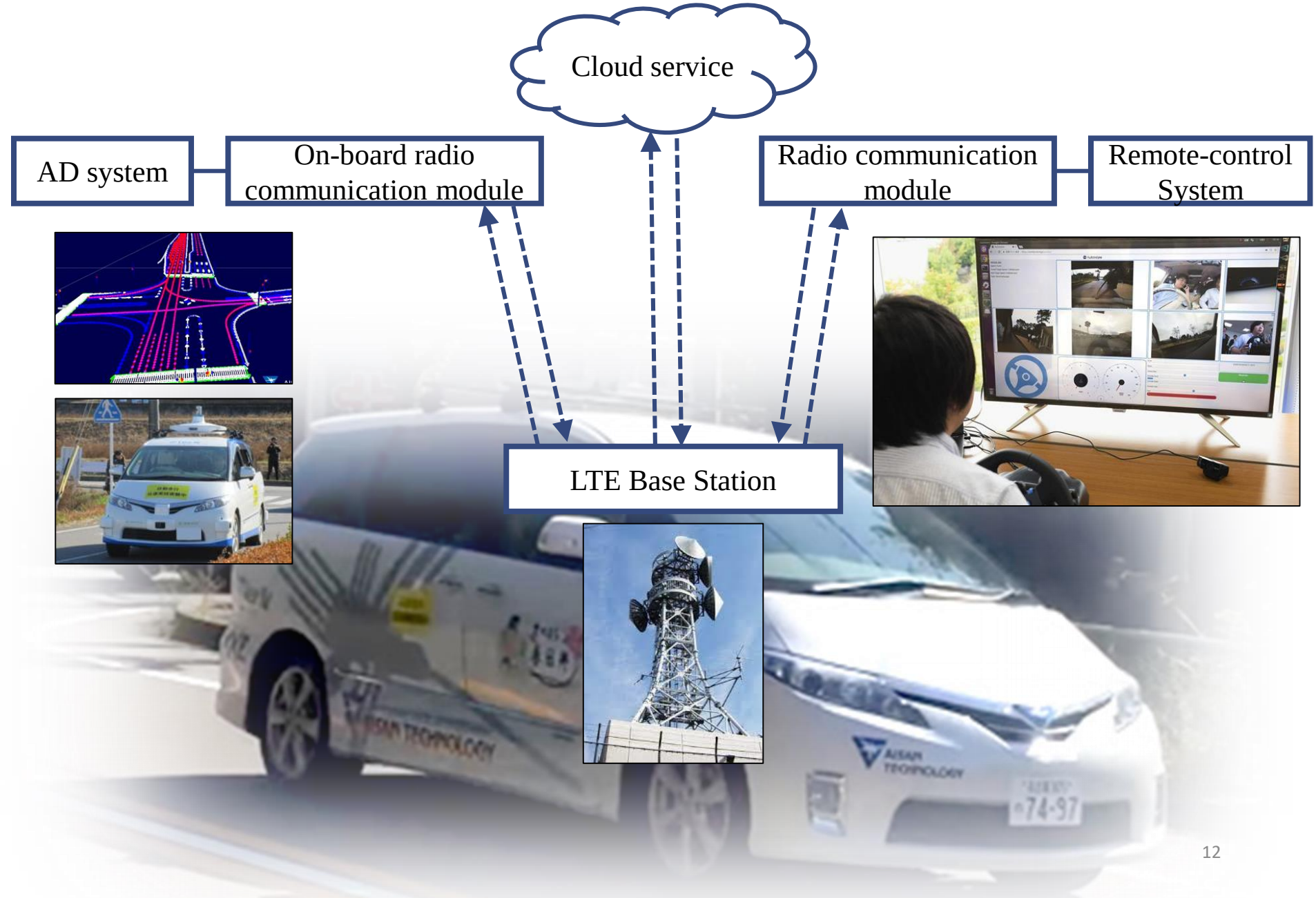
- Published in May 2016
- Guidelines for the test of AD with the driver inside the vehicle.
- Any permission/report is not needed as long as the testing entity follows this guideline.
- Testing of all levels of AD is allowable under existing laws as long as driver inside the vehicle can take over the control of vehicle in emergency situations.

■ Criteria for the permission on using public roads for testing of Automated Driving System with Remote Control Technology

- Published in June 2017
- Criteria for the permission for the test of AD with Remote Control Technology (the driver is remote from the vehicle)
- The permission is needed for the test
- Stating the case where one driver drives multiple vehicles

Both are available to read on our homepage (https://www.npa.go.jp/bureau/traffic/selfdriving/index.html).

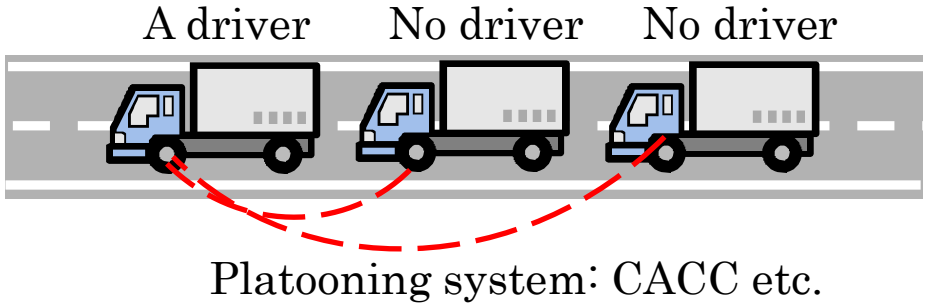
[AD Testing Using Remote-Control Systems]



- Next items to address

- **Institutions for accommodating deployment of high level of automated driving technologies (SAE level 3 and higher)**

- **How to realize truck platooning (without drivers inside the following vehicles)**



4 Addressing International and National Legal Issues Regarding AD

- Issues to address for deployment of SAE level 3 and some level 4

  - What kind of secondary activities could be allowed ?
  - How to ensure that AD systems comply with applicable rules ?
  - Penalties for violations of rules by AD systems
  - Record and use of data generated from AD system operations
  - Interaction and communication with other rode users

[National Projects of Automated Driving Testing]

● Pilot-project of AD operation based on “Michi-no-eki”, road side rest stations at mountainous regions

▲ Last-mile AD testing

● Truck platooning testing on highways

★ Large-scale practical experiments involving multiple entities

■ AD bus project

Thank you for your attention.