Press Release

October 3, 2017
Cabinet Office
Counsellor for Common Service Platform, Bureau of Science, Technology and Innovation

Start of Large-Scale Field Operational Test for "Automated Driving System"

"Automated Driving System," part of the Cross-ministerial Strategic Innovation Promotion Program (SIP), has launched the Large-Scale Field Operational Test to accelerate the practical application of technologies necessary to implement the system. Over 20 organizations including Japanese and overseas automakers are participating in the Large-Scale Field Operational Test, which begins today and will be conducted progressively on the Tomei Expressway, Shin-Tomei Expressway, Shuto Expressway and Joban Expressway and on surface streets in the Tokyo waterfront area (see attached materials).

1. Developments to date

In the SIP "Automated Driving System," research and development has been progressing since fiscal 2014 aiming at reduction of the number of traffic accidents and realization of the Next Generation Transportation System through real-world application of the Automated Driving System, with a focus on five key technology fields as cooperation areas among industries, academia and governments: Dynamic Map[1], HMI[2], Cyber Security, Pedestrian Traffic Accident Reduction, and Next Generation Transport.

1. High-precision three-dimensional digital map for automated driving.
2. Human-Machine Interface: Safe and smooth technology interfaces in case of switching between human and system operation.

2. Overview of Large-Scale Field Operational Test

Technologies researched and developed in the five above-mentioned focus areas will be tested to accelerate the practical application of the Automated Driving System in real environments of public roads, with the participation of automakers and other stakeholders.

The results of research and development will be reviewed by numerous stakeholders and advance to future R&D, and the participation of overseas manufacturers will promote international collaboration and global standardization.

This is the largest automated driving field operational test in Japan regarding the international aspect with the participation of OEMs from overseas, integrated field operational tests with a variety of technologies necessary to deploy Automated Driving Systems, coverage of a wide area of real traffic circumstances, and amount of participation, with more than twenty participants.

This Large-Scale Field Operational Test is a very unique approach with the participation and collaboration of many OEMs, suppliers and institutes.

The following is an overview of the Large-Scale Field Operational Test.

1) Implementation period: October 3, 2017 – March 2019*

*Tests to be conducted progressively with different start times depending on content and participating organization(s)

2) Participants

Japanese and overseas automakers, auto parts manufacturers, universities, and others (total of 21 organizations) *

*As of October 3, 2017

3) Test areas

- Expressways (sections of the Tomei Expressway, Shin-Tomei Expressway, Shuto Expressway and Joban Expressway) Total distance of 300 km (one way)
- Surface streets (Tokyo waterfront area and vicinity of Tsukuba in Ibaraki Pref.)
- Test course (Japan Automobile Research Institute [JARI test cours Tsukuba, Ibaraki Pref., etc.])

4) Main contents of tests

- Verification of high-precision three-dimensional digital map under real traffic conditions (Dynamic Map)
- Data collection of degree of concentration of drivers during driving (HMI)
- Verification of protective functions of automated driving vehicles against cyber attack (Cyber Security)

Verification of accident reduction effectiveness of wireless communication technologies between vehicles and pedestrian hand-

- held devices (Pedestrian traffic accident reduction)
- Verification of automated driving technology application to public buses, etc. (Next generation transport)

3. Other field operational tests

Within the Cross-ministerial Strategic Innovation Promotion Program (SIP) "Automated Driving System," in addition to the Large-Scale Field Operational Test, other field operational tests are scheduled in this fiscal year with the aim of expanding automated driving technology into different areas of Japan.

- Automated driving bus field test in Okinawa: Scheduled to be conducted in November and December of this year
- Test of automated driving service based at rest areas, etc. in mountainous areas:

Ashikitadekopon Rest Area (Ashikita-machi): September 30 (Sat.) – October 7 (Sat.), 2017 and others (total of 13 locations around Japan)

(Attached materials) Large-Scale Field Operational Test Outline of "Automated Driving System" (Cross-Ministerial Strategic Innovation Promotion Program [SIP])

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内閣府
Cabinet Office, Government of Japan

Large-Scale Field Operational Test Outline of "Automated Driving System" (Cross-Ministerial Strategic Innovation Promotion Program [SIP])

SIP
戦略的イノベーション創造プログラム

1. Participating organizations

Daihatsu Motor Co., Ltd.

Continental Automotive Corporation

Meiji Logitech Co., Ltd.

Toyota Motor Corporation

Pioneer Corporation

Suzuki Motor Corporation

BMW Japan Corp.

Honda R&D Co., Ltd.

Alpine Electronics, Inc.

Volkswagen Group Japan Co., Ltd.

Calsonic Kansei Corporation

Mazda Motor Corporation

Mitsubishi Electric Corporation

Mercedes-Benz Japan Co., Ltd.

Omron Corporation

Subaru Corporation

Bosch Corporation

Nissan Motor Co., Ltd.

ZMP Inc.

Saitama Institute of Technology

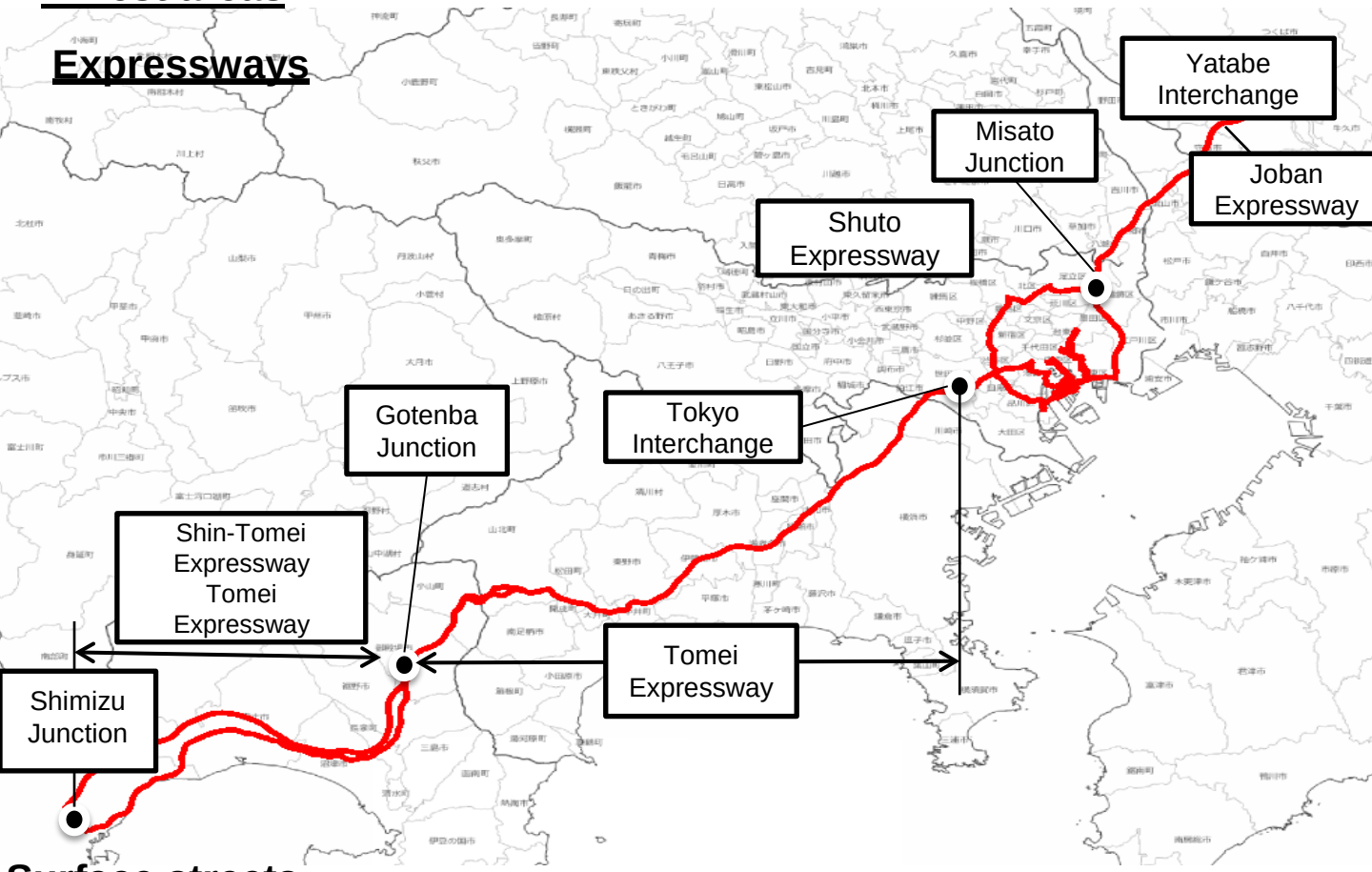
Nagoya University

Total of 21 organizations

*1. As of October 3, 2017.
*2. Section on Dynamic Map field operational test lists agencies participating in HMI field operational test in the order they applied to participate.

2. Test areas

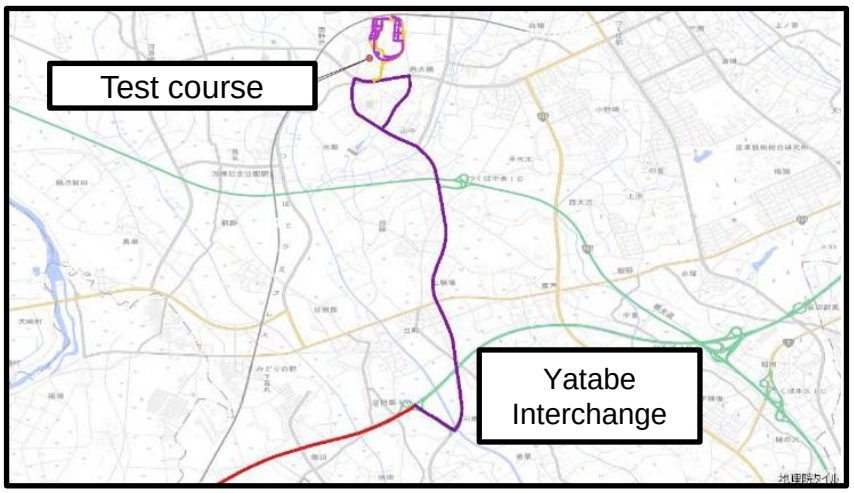
Expressways



Surface streets

Tokyo waterfront area

Vicinity of Tsukuba in Ibaraki Pref.



2. Test areas (precise locations)

Road	Section of road	Total distance (km)
Tomei Expressway	Tokyo Interchange－Shimizu Junction (traveling away from Tokyo between Oi-Matsuda Interchange and Gotenba Interchange, left route used)	140
Shin-Tomei Expressway	Gotenba Junction－Shimizu Junction	62
Joban Expressway	Misato Junction－Yatabe Interchange	30
Shuto Expressway	Misato Route (Kosuge Junction－Misato Junction)	10
	Central Circular Route (Kasai Junction - Oi Junction)	46
	Inner Circular Route (Tanimachi Junction - Hamazakibashi Junction)	3.4
	Bayshore Route (Oi Junction - Kasai Junction)	10
	Haneda Route (Hamazakibashi Junction - Shibaura Junction)	0.7
	Daiba Route (Shibaura Junction - Ariake Junction)	3.6
	Shibuya Route (Tokyo Interchange - Tanimachi Junction)	11.7
	Fukagawa Route (Hakozaki Junction - Tatsumi Junction)	5.6
	Mukojima Route (Hakozaki Junction - Komagata Interchange)	3.2
Expressway distance total		Approx.300 km
Surface streets	Showa-Dori Street (From intersection in front of Shinbashi Station - Mihara-bashi intersection) Harumi-Dori Street (Mihara-bashi - Harumi-ohashi Bridge south intersection) Kanjo Nigosen Route (Harumi-ohashi Bridge south intersection - Ariake 2-chome) Odaiba vicinity	25
	Ibaraki Prefectural Route 19, Tsukuba municipal road, Prefectural Route 123 (from Joban Expressway Yatabe Interchange to Japan Automobile Research Institute [JARI] main entrance)	9
On research institution premises	From JARI main entrance to JARI urban area simulated test course, and on urban area simulation test course	7

(Note) In addition to the above, some experiments may be carried out at research institutes, test courses, on surface streets, etc.

3. Main contents of tests

Dynamic Map[1] field operational tests

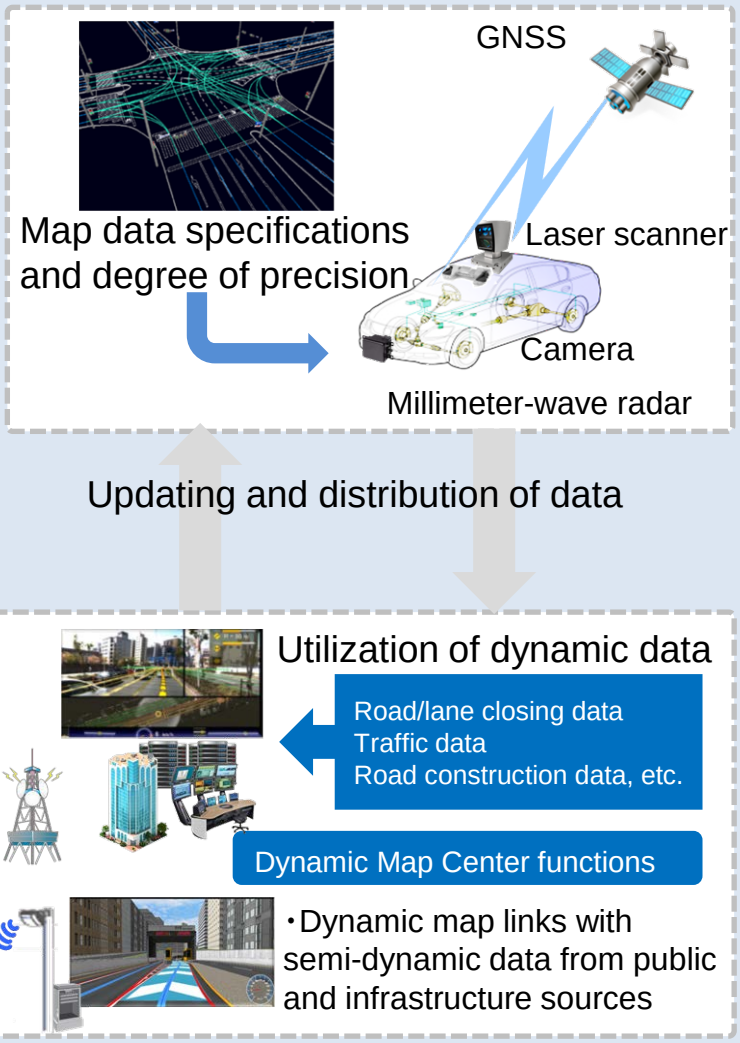
(Conducted progressively starting in Oct. 2017)

○ Verification of high-precision 3D map data on various road shapes such as curves, road environments, structures, etc.

○ Verification of effectiveness of time-specific data such as on traffic conditions and road construction

○ Update of Dynamic Map information / Verification of distribution system, etc.

1. High-precision three-dimensional digital map for automated driving, with data that changes (dynamically) over time, such as on traffic jams, road work, road and lane closings, etc. linked to a base of underlying road map data



3. Main contents of tests (continued)

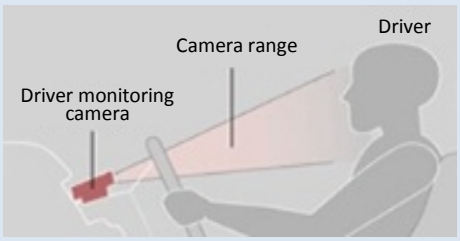
HMI² field operational tests

(Conducted progressively starting in Nov. 2017)

○ Data collection of degree of concentration of drivers during driving (HMI)

○ Collection, analysis and application of HMI method to the above, verification of system effectiveness

○ Verification of indicators of degree of concentration of drivers during driving, verification of appropriate timing of switch from automatic to manual operation according to degree of concentration, etc.



Monitoring of driver's state

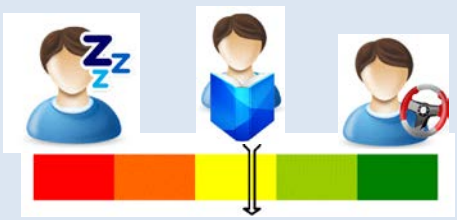


Image of transition of driver's state during long-term continuous driving

2. Human-Machine Interface: Safe and smooth technology interfaces in case of switching between human and system operation

Cyber Security operational tests

(Conducted progressively starting in summer 2018 on research institution test courses)

○ Verification, on testing facility premises, of evaluation methods in case of a cyber attack from the outside the vehicle

○ Verification of protective functions of automated driving vehicles against cyber attack

Simulated cyber attack at the testing facility and verify vehicle system

3. Main contents of tests (continued)

Pedestrian traffic accident reduction field operational tests

(Conducted progressively starting around Feb./Oct. 2018 in Tokyo waterfront area)

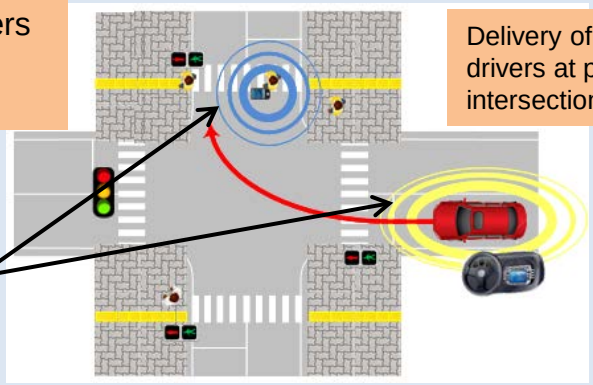
○Verification of accident reduction effectiveness of wireless communication technologies between vehicles and pedestrian hand-held devices and high–precision localization measurement technology, to prevent cognitive errors accounting for the majority of pedestrian traffic fatalities

○ Verification of the safety benefits of alerts to both pedestrians and drivers etc.

Alerts to holders of pedestrian terminals

Delivery of information to drivers at poor-visibility intersections

Communication between cars and pedestrian communication terminals via vehicle-to-pedestrian communication

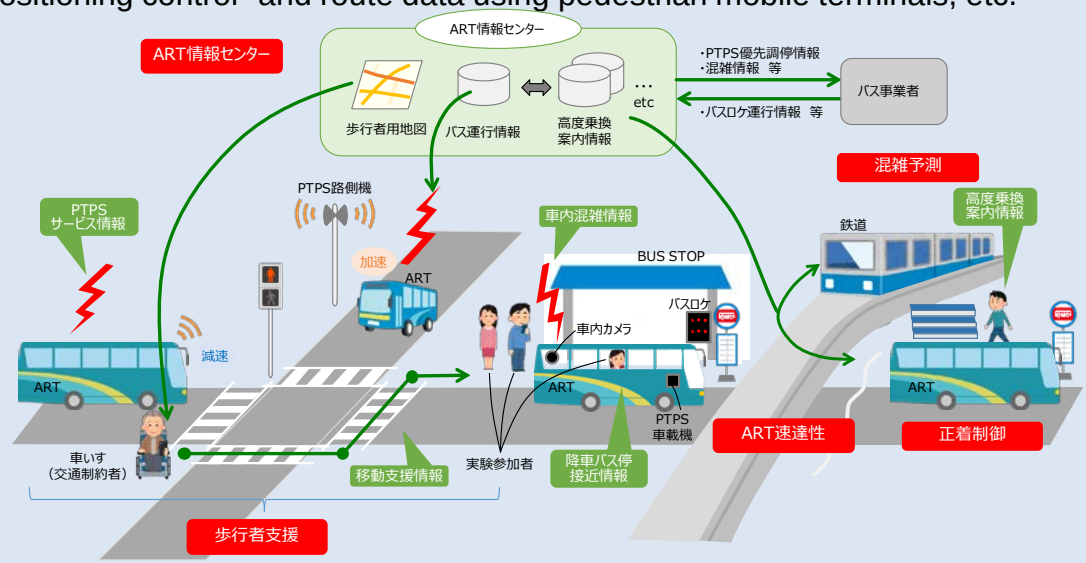


Next Generation Transportation System field operational tests

(Conducted progressively starting around summer 2018 in Tokyo waterfront area)

○ Verification of user-friendliness and speed of public buses equipped with ART technology[3] such as collection and accumulation of driving data at ART information center and delivery of data to to users, etc.

○ Verification of the user experience and benefits of mobile support such as provision of bus positioning control[4] and route data using pedestrian mobile terminals, etc.



3. Technologies related to the Next Generation Transportation System, which applies automated driving technology, etc. to public buses.
4. Function that enables people in wheelchairs and elderly people to easily get on and off, by stopping the bus so close to the bus stop that there is hardly any gap

[Ref.] SIP: Automated Driving System

Objective: Advance R&D on issues to be tackled by cooperation among industries, academia and governments toward real-world application of the advanced Automated Driving Systems. Working in tandem with stakeholders, dramatically improve the convenience of transit, while reducing accidents and road congestion.

Scheduled term of implementation: Five years (FY2014-FY2018)

Projected budget: FY2014：253.5 billion, FY2015：235.8 billion, FY2016：271.3 billion, FY2017：336.5 billion

Program Director: Mr. Seigo Kuzumaki, Chief Safety Technology Officer (CSTO) Secretary, Advanced Technologies Development Company, Toyota Motor Corporation

Participating ministries, etc.: Cabinet Office, National Police Agency, Ministry of Internal Affairs and Communications, Ministry of Economy, Trade and Industry, Ministry of Land, Infrastructure, Transport and Tourism, New Energy and Industrial Technology Development Organization (NEDO)

SIP : Cross-ministerial Strategic Innovation Promotion Program
The Cross-ministerial Strategic Innovation Promotion Program (SIP) is a national project for science, technology and innovation, spearheaded by the Council for Science, Technology and Innovation as it exercises its headquarters function to accomplish its role in leading science, technology and innovation beyond the framework of government ministries and traditional disciplines. Each SIP project is led by a program director who is responsible for end-to-end focused research and development, facilitating coordination among governments, industries, and academia.

Field operational test phase begins this fiscal year