Dynamic Map

From SIP-adus workshop 2020

Tokyo (Online), November 11, 2020

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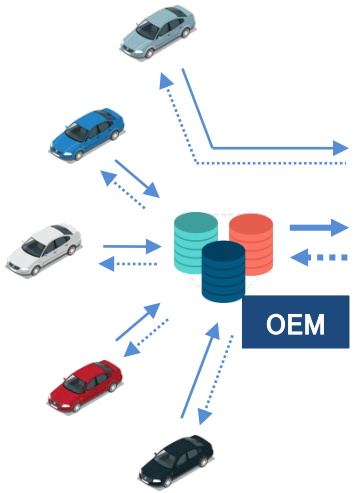
SIP

Cabinet Office

Contents

Overview of Dynamic Map

Dynamic Map



API : Application Program Interface

Dynamic Data

Movement of Vehicles, Status of Pedestrians, Traffic Signals etc.

Semi-dynamic Data

Accidents, Traffic Jams, Detailed Weather etc.

Semi-static Data

Traffic Regulation, Road Construction, Weather etc.

Static Data
=High Definition 3D Map

Road, Lane, 3D Shape of Structures etc.

Combine various data

Digital Mapping

Various Uses

Platform

3D Common Platform Data

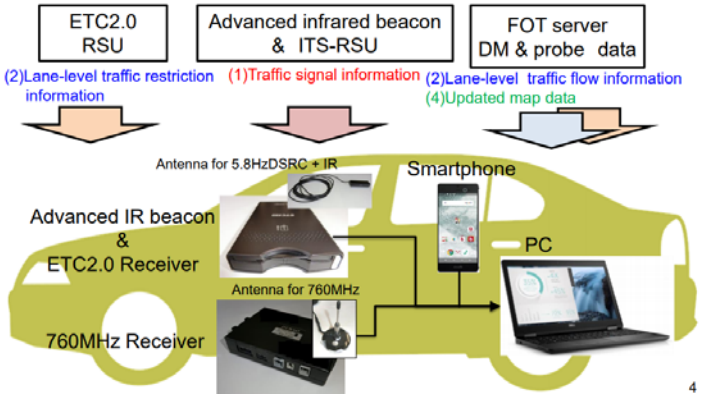
Point Clouds, Graphics, Probe Data etc.

Dynamic Map FOT 1st Phase (-2018)

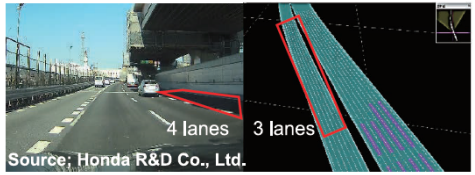
Data for Dynamic Map FOT

Data	Data: detail	Media
(1)Dynamic	Traffic signal information	Advanced infrared beacon & 760MHz
(2)Semi-dynamic	Lane-level traffic flow information (Probe data)	LTE
	Lane-level traffic restriction information	ETC2.0(5.8GHz)
(3)Semi-static	NA	NA
(4)Static	Map data	DVD
	Updated data	DVD+LTE

System for Dynamic Map FOT

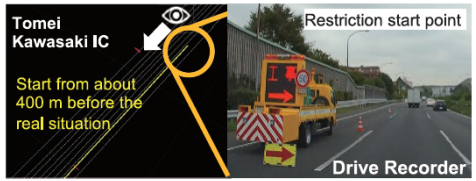


FOT situations

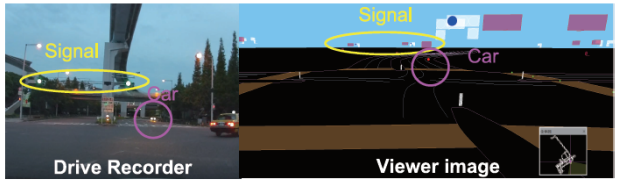


Change road shape (3 lanes >>4lanes) = Updated Map

Semi-dynamic: Lane-level traffic flow information



Semi-dynamic: Lane-level traffic restriction information



Dynamic: Traffic signal information, vehicle location

Result of Dynamic Map FOT

✓ The results were opened on SIP-adus website.

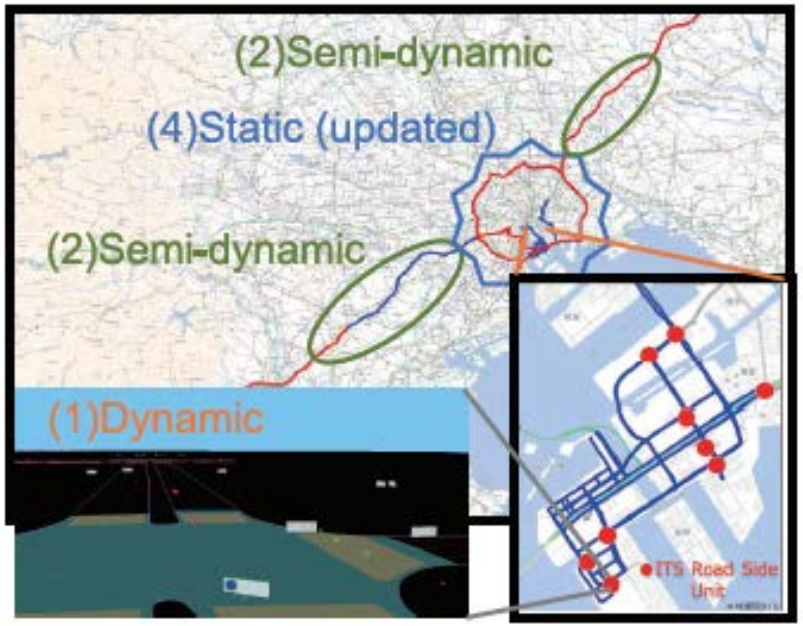
Dynamic Map FOT 1st Phase (-2018)

Participants: 22 participants

ALPINE, BMW, MINI, BOSCH Invented for life, Calsonic Kansei, Continental, DAIHATSU, HONDA The Power of Dreams, mazda, Mercedes-Benz, MLT Meiji LogiTech, MITSUBISHI ELECTRIC, 名古屋大学 Nagoya University, NISSAN Motor Corporation, OMRON, Pioneer, 埼玉工業大学 Saitama Institute of Technology, SUZUKI, SUBARU, TOYOTA, Valeo, VOLKSWAGEN Aktiengesellschaft, ZMP

* Participants of the FOT for Dynamic Map or HMI

Test area: over 758km of Map data



After the results of 1st phase

DYNAMIC MAP PLATFORM

FAQ CONTACT JP EN

TOP ABOUT US SERVICE CASE STUDIES NEWS COMPANY

SERVICE

Provided Service / Current Development Status

As at the end of March 2019, we have completed the initial preparation of data for 29,205 km of expressways and highways across Japan and provide the data for a fee.
To deal with newly extended or altered roads, we have started preparing updated data.
For ordinary roads, we assume that data preparation starts from densely populated areas.

Expressways and Highways Across Japan

We have completed the initial preparation of data for 29,205 km (link length) of expressways and highways across the country, and have begun providing this data for a fee since the end of March 2019. This data is now being used for highly accurate navigation, ADAS and automated driving applications by OEMs in and outside Japan. (The data is provided via map data providers.)
We have also started preparing data for expressways and highways opened after our initial data preparation set, and this data will enter the market at the end of September 2019 (for expressways opened before the end of March 2019). We will also progressively update data for newly extended or repaired roads.

Total: 29,205 km

- ✓ Created a company (DMP) to produce base map.
- ✓ Start providing map data for expressways and highways from Mar. 2019. (total 29,205km)
- ✓ Automated vehicle with DMP data have been released from 2019.

https://www.dynamic-maps.co.jp/en/index.html

2nd phase FOT (2018-, original plan)

Test Participants:

For a wide variety of people including overseas OEM, parts and system suppliers, universities, research organizations and venture companies.

Period:

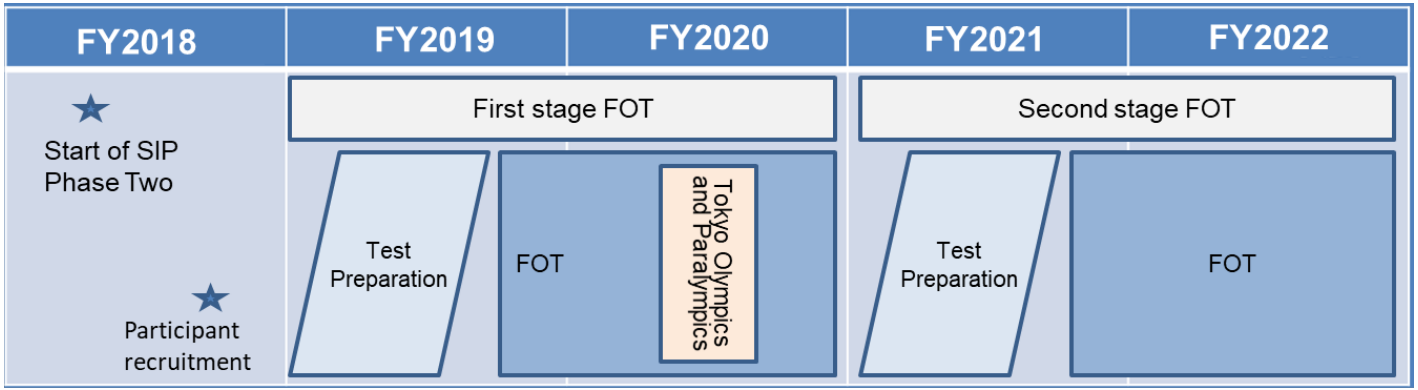
1st stage field operational test (2019 to2020)

- **Field tests of necessary cooperative infrastructure technologies** to achieve level 4 autonomous driving on freeways and ordinary roads.

2nd stage field operational test (2021 to 2022)

- **Modifications to the cooperative infrastructure technologies** that came to light in the 1st stage FOT
- **Field operational testing for new R&D issues** in preparation to establish a test environment for the legacy cooperative infrastructure system

Schedule



*There is the possibility the FOT will not take place during the Tokyo Olympics and Paralympics.

Participants for the FOT (-2020)

AISAN TECHNOLOGY CO.,LTD.
Valeo Co., Ltd.
SB Drive Corp.
Epitomical Limited
Kanazawa University
Continental Automotive Corporation
Saitama Institute of Technology
JTECT CORPORATION
SUZUKI MOTOR CORPORATION
SUBARU CORPORATION
Sompo Japan Nipponkoa Insurance Inc.
DAIHATSU MOTOR CO., LTD.
Chubu University
Tier IV, Inc

TOYOTA MOTOR CORPORATION
Nagoya University
NISSAN MOTOR CO.,LTD.
BMW Group
Hino Motors, Ltd.
Field auto Inc.
Volkswagen Group
Bosch Corporation
Honda Motor Co., Ltd.
Mazda Motor Corporation
MITSUBISHI MOTORS CORPORATION
Mitsubishi Electric Corporation
Meijo University
Mercedes-Benz Co., Ltd.
Advanced Smart Mobility Co., Ltd.

29 participants (20 Feb. 2020)

Tokyo Waterfront City Area FOT

Objective:

The purpose of the FOT and consensus-building is to create standardized specifications for how information is delivered, how to link information and information delivery specifications by establishing a test environment utilizing traffic environment information.

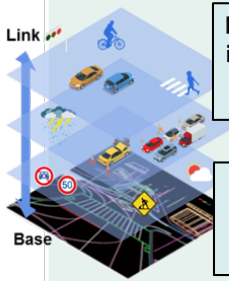
Establish FOT utilizing traffic environment information → **FOT in actual traffic environment** → **Verification and consensus-building by participants for standardized specifications**

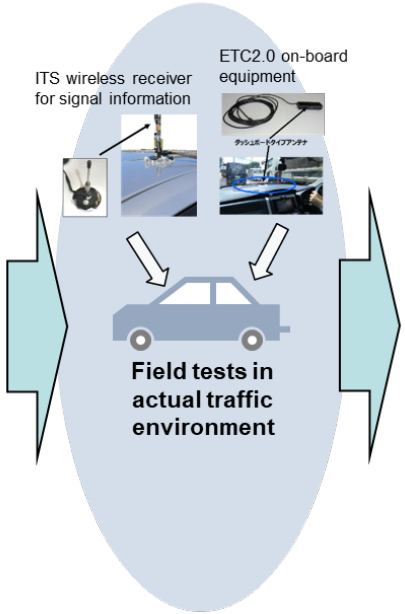
Signal information
Ordinary roads

Merging / ETC gate support information
Highways

Lane level traffic information
Highways

High-accuracy 3D maps
Ordinary roads | Highways



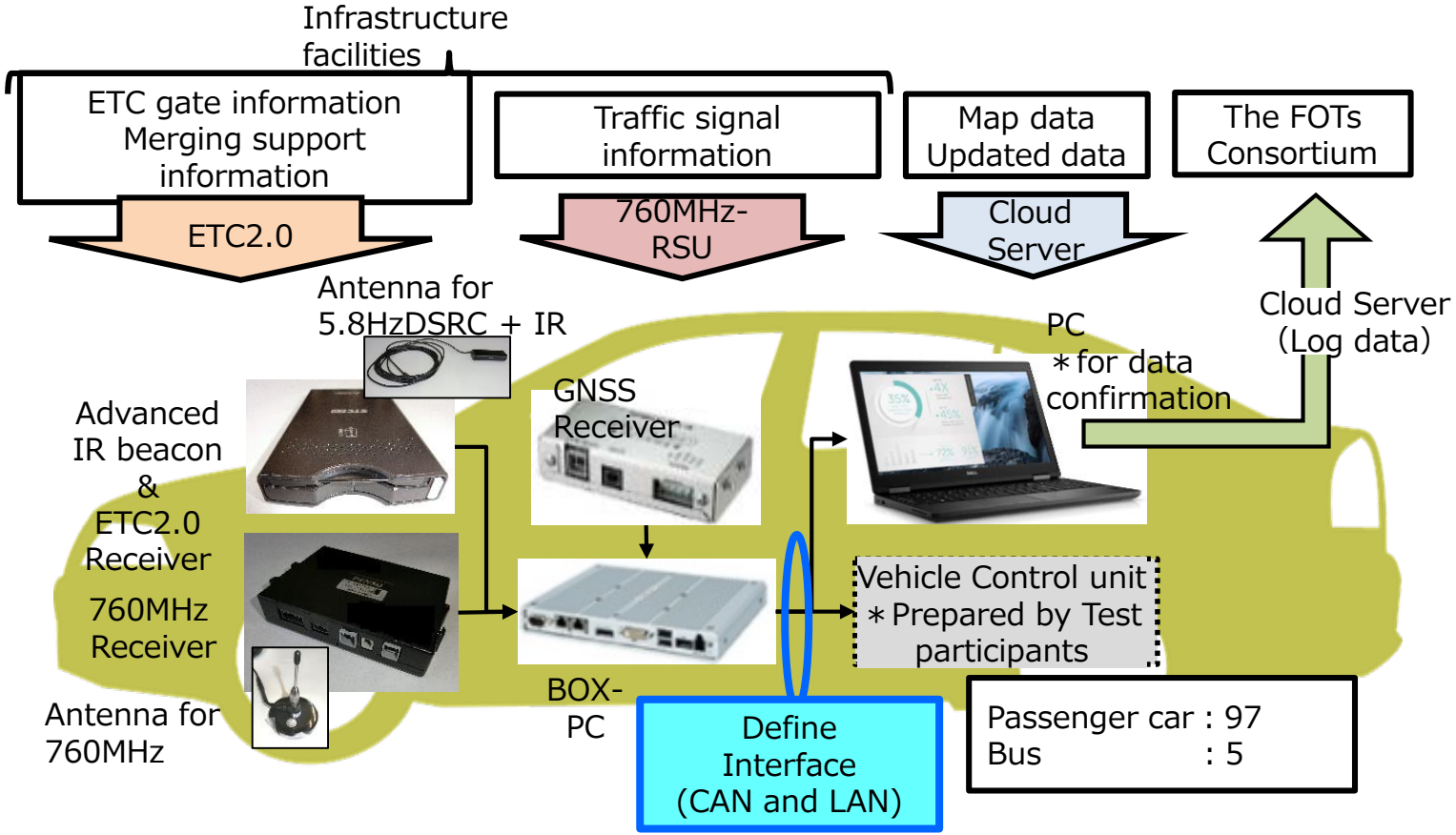


Verification Items

- **Information delivery specs**
- **Information linking method** (Time / positioning referencing model)
- **State of road-to-vehicle collaboration**
- **Delivery method** (Communications method)

*The technological topics may increase/decrease according to R&D progress

Test equipments for the FOT



FOT re-scheduling

- ✓ **FOT re-scheduling**
  - ➢ FOT will continue till the end of Feb. 2021 (2 month extension)
  - ➢ Test-ride event will be planed in 2021 (postponed from 2020)
  - ➢ FOT plan for 2021 will be released by the end of 2020

International collaborations

- ✓ **ISO**
  - ➢ Deeply contributed the related items on ISO/TC204/WG3
    - ✓ ISO/20524-1 and 2: Geographic Data Files 5.1
    - ✓ ISO/17572-4: Precise Relative Location Referencing
    - ✓ TS/22726-1 and 2: Dynamic Data and Map DB Specification for Connected and Automated Driving System Aps

      and others,

- ✓ **OADF (Open AutoDrive Forum), the industrial standards forum**
  - ➢ participate as a Steering Committee member

Further collaborations

- ✓ **OADF/ADASIS**
  - ✓ SIP-adus is thinking about using some OADF members' standards at the FOT
  - ✓ Discussion with ADASIS for the possibility for FOT 2021-2022
  - ✓ Sent a letter from NEDO to ADASIS AISBL to ask for providing v3 specification for SIP-adus FOT
    - ➢ Got the documents and studying now.
  - ✓ Seeking for other collaborations..

For the future

- ✓ **The activities of SIP-adus are Open basis**
  - Focus on FOTs with real data.
  - Open the results of the project (in English).
  - Keep, enhance international harmonization / collaborations.

- ✓ **Keep in touch!**