Dynamic Map Development in SIP-adus

Cross-Ministerial Strategic Innovation Promotion Program
Innovation of Automated Driving for Universal Services

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Ryota Shirato

Member of System Implementation WG, SIP-adus
（Nissan Motor Company）

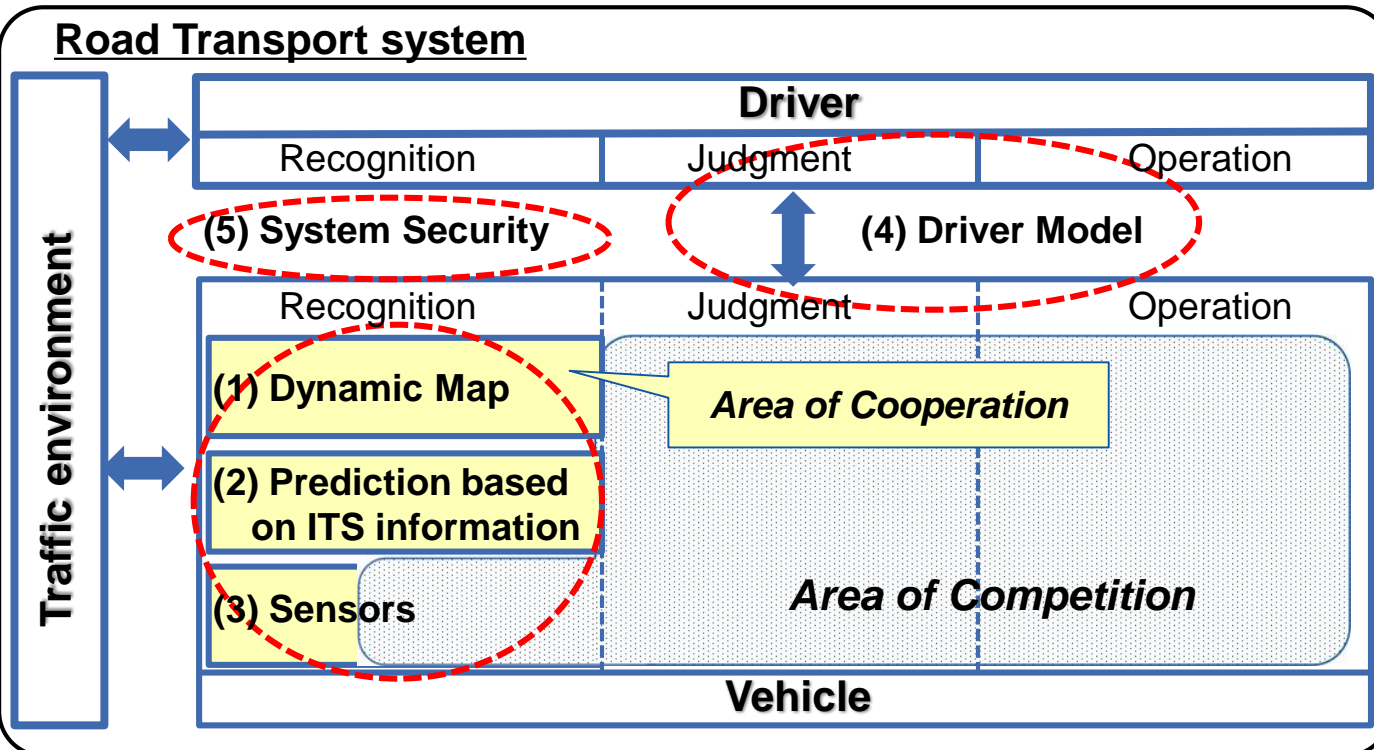# Scope of SIP-adus

(I) Development and verification of automated driving system

(III) International cooperation

Road Transport system

Driver		
Recognition	Judgment	Operation

(5) System Security

(4) Driver Model

Recognition	Judgment	Operation

Traffic environment

(1) Dynamic Map

Area of Cooperation

(2) Prediction based on ITS information

(3) Sensors

Area of Competition

Vehicle

(III) International cooperation:
(1) Open research facility
(2) Social acceptance
(3) Technology transfer

(1) Enhanced local traffic management
(2) Next generation transport system

(1) Traffic fatality reduction effect estimation method & national shared database
(2) Macro and micro data analysis and simulation technology
(3) Local traffic CO_2 emission visualization technology

(IV) Development for next generation urban transport

(II) Basic technologies to reduce traffic fatalities and congestion

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Framework for Dynamic Map

Data Collection

Compilation as 'Dynamic Map'

Service Operations

Common database

Customization
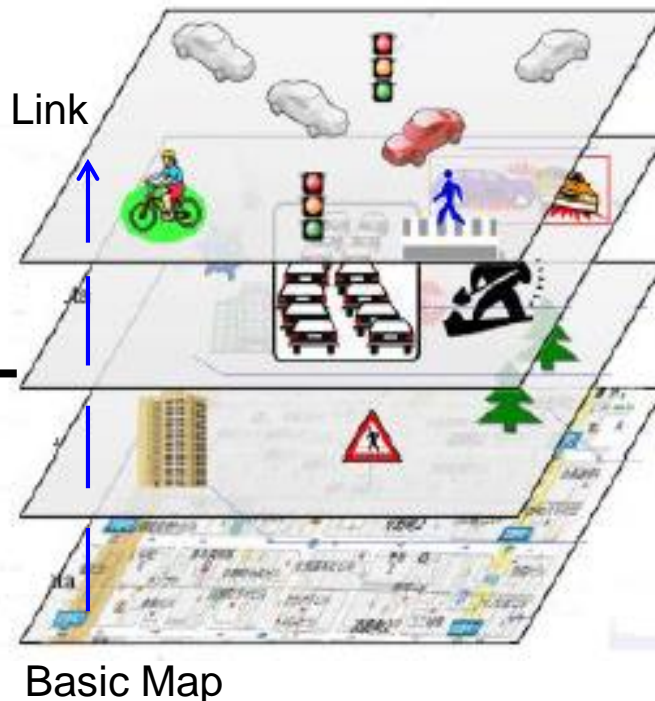
Public Agencies
- Congestion
- Accidents
- Road conditions
- Traffic regulations
- Road signs

Structured Database

Private Sectors

Field survey

GNSS

MMS

Dynamic Data

Static Data

Structured Database

Map Supplier A

Operation Service X

Map database

Probe Data

Subscriber

Structured Database

Map Supplier B

Alliance

Operation Service Y

Map database

Probe Data

Subscriber

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Dynamic Map Activities in SIP-adus

	Design and Operation of HD Map	Dynamic Data Utilization	Dynamic Map Application
FY2014	First Trial of Lane Level HD Map		Use-Case Study
FY2015	Compilation of Data Spec and Guideline of HD map	Study of Probe Data Utilization Roadmap	Prototyping of Dynamic Map Data and Data Viewer
FY2016	Upgrading of Lane Level HD Map - Measurement and Editing Study of 'Dynamic Map Center' - Updating HD Map - Delivery process to Map Suppliers - Aggregation/Creation of Quasi-Dynamic Data Construction of 'Dynamic Map Center' Function		Function and Cost Study of 'Dynamic Map Center' - 'Dynamic Map Center' Function - Operation Cost of HD Map
on and after FY2017	Nationwide Updating FOT Standardization Realization Dynamic Map Implementation		

FY2015 Activity

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on and after FY2017	Nationwide → Updating → FOT → Standardization → Realization → **Dynamic Map Implementation**		

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FY2015 Activity

FY2016 Activity

|	Design and Operation of HD Map	Dynamic Data Utilization	Dynamic Map Application
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on and after FY2017	Nationwide → / Updating → / FOT → / Standardization → / Realization → **Dynamic Map Implementation**		

Upgrading HD Map Data

Route No.1

Route No.2
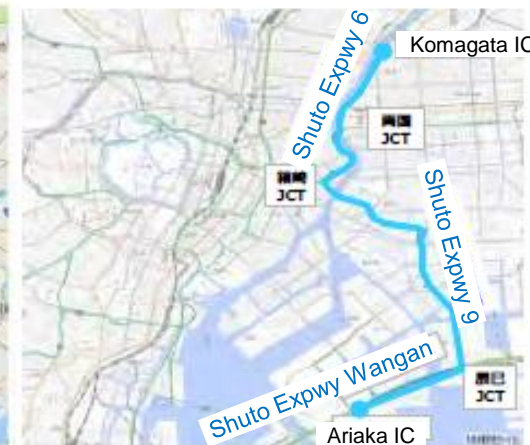
Route No.3

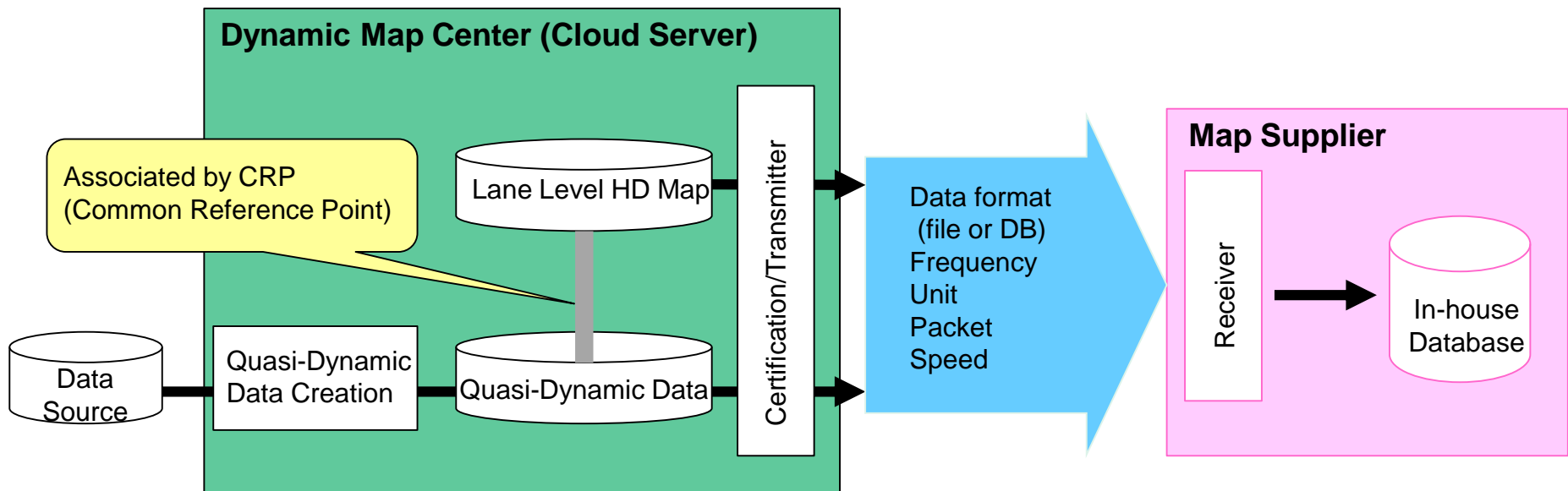| Route (km)	Features
No.1 (200km)	Tight corners on highway, Straight, Tunnel
No.2 (40km)	Wide road (4 lanes), Heavy traffic, Traffic jam,
No.3 (20km)	Narrow road, Fork, Superelevation, Juction

Dynamic Map Center

- ➢ Providing HD Static/Quasi-Dynamic data to Map Supplier
- ➢ Creating Quasi-Dynamic data and associating with HD Map

Studying System Configuration and Detailed Specification
Establishing Temporary 'Dynamic Map Center' in the Cloud

Dynamic Map Center (Cloud Server)

Associated by CRP
(Common Reference Point)

Lane Level HD Map

Certification/Transmitter

Data format
 (file or DB)
Frequency
Unit
Packet
Speed

Map Supplier

Receiver

In-house
Database

Data
Source

Quasi-Dynamic
Data Creation

Quasi-Dynamic Data

Data Flow to/from Dynamic Map Center

Maps for public use

3D maps for infrastructure management, disaster prevention, etc.
2D maps for road drawings, taxation, etc.

Construction company, local government

Semi-dynamic Semi-static

Dynamic

Merged with the existing system for functions to collect and send the Dynamic Data

Accident, congestion, weather, construction, road regulation, traffic light, etc.

Competitive Area

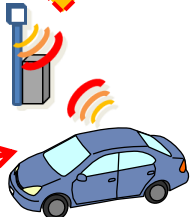| Land Survey Company C	Land Survey Company D
Company C's original data	Company D's original data
Common Platform for 3D map	Common Platform for 3D map

Map Supplier A

OEM A

Map Vendor A's original data

Dynamic Map Cooperative Area

OEM A's automated driving center

OEM A's vehicle

Static info.

Dynamic Map Cooperative Area (3D Map)

Road geometry
Lane info.
Structure info.
Object info.

Common Interface

Competitive Area (automotive)

Link

Public info.
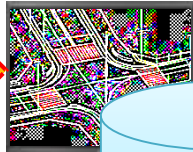
MMS Info.

3D Map Common platform data

3D laser point cloud+ Video images + Vector data for common services

Map Supplier B

OEM B
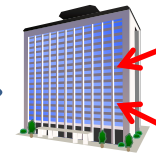
Map Vendor B's original data

Dynamic Map Cooperative Area

OEM B's automated driving center

OEM B's truck

Develop this area and deliver to map companies and OEM's

Probe info.

Dotted arrows: To be examined

FY2017 Activity

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Thank you for your listening