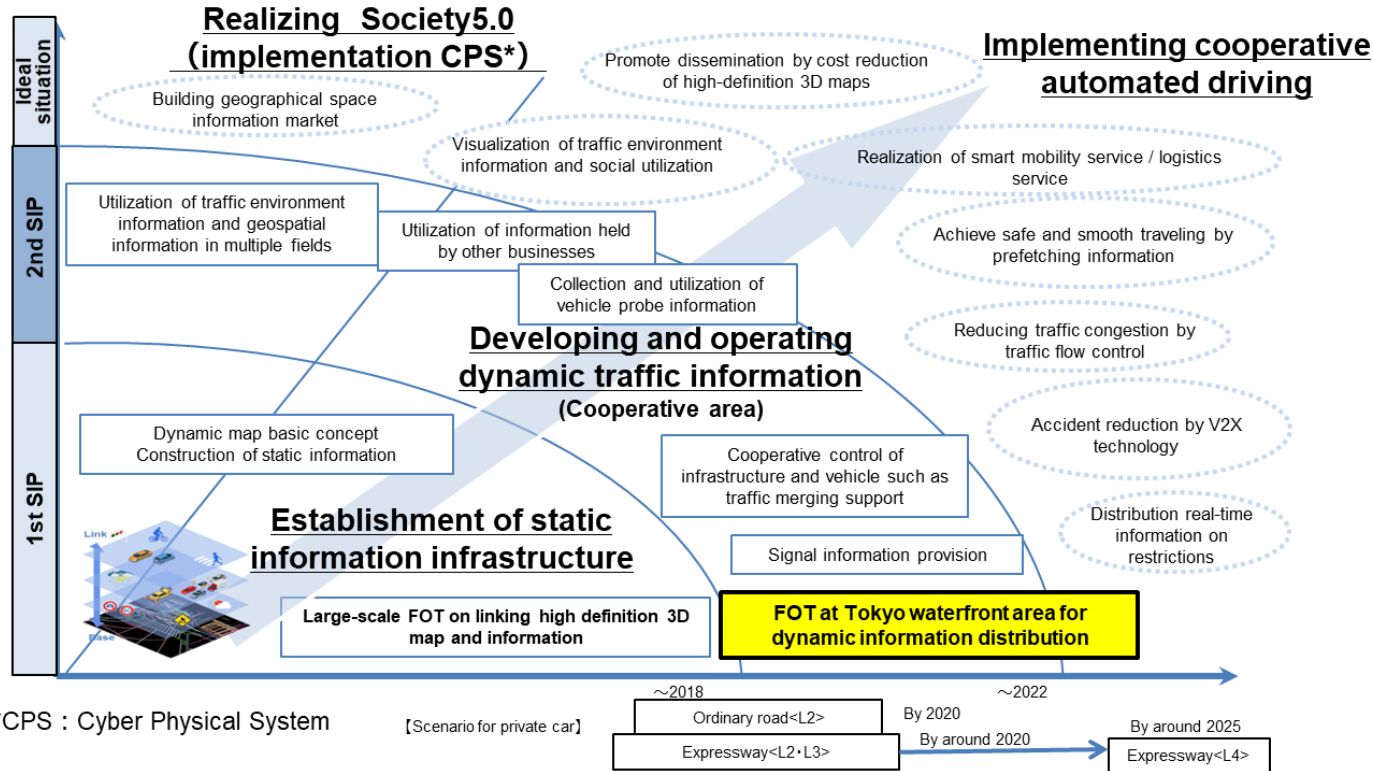# SIP-adus FOTs in Tokyo waterfront area

－ Toward the realization of cooperative autonomous driving－

Masato MINAKATA（TOYOTA MOTOR Co.）

Roadmap for traffic environment information

◆ Formulated "Traffic environment info. construction and utilization roadmap" and worked on standardization and practical application through demonstration experiments.


Realizing Society5.0 (implementation CPS*)

Implementing cooperative automated driving

Promote dissemination by cost reduction of high-definition 3D maps

Building geographical space information market

Visualization of traffic environment information and social utilization

Realization of smart mobility service / logistics service

Utilization of traffic environment information and geospatial information in multiple fields

Utilization of information held by other businesses

Achieve safe and smooth traveling by prefetching information

Collection and utilization of vehicle probe information

Developing and operating dynamic traffic information (Cooperative area)

Reducing traffic congestion by traffic flow control

Dynamic map basic concept Construction of static information

Cooperative control of infrastructure and vehicle such as traffic merging support

Accident reduction by V2X technology

Establishment of static information infrastructure

Signal information provision

Distribution real-time information on restrictions

Large-scale FOT on linking high definition 3D map and information

FOT at Tokyo waterfront area for dynamic information distribution

*CPS : Cyber Physical System

【Scenario for private car】

~2018	By 2020	~2022		By around 2025
Ordinary road<L2>				
Expressway<L2・L3>	By around 2020			Expressway<L4>

Ideal situation / 2nd SIP / 1st SIP / Link / Base

SIP Phase 2 FOT in Tokyo Waterfront area(FY19～FY20)

Construction of a mechanism for dynamic info. utilization using wireless communication

- Demonstration by **narrow-range wireless communication (V2I **)** using a dedicated frequency band assigned to ITS * applications to establish specifications for providing **signal info.**.

- Demonstrate technical feasibility with **wide area public network communication (V2N ***)** to build a mechanism for **collecting and utilizing private probe data** from POV.

(Ex. Signal info. distribution)

760MHz band

Cloud server   LTE

V2I

V2N

Within 200-300m
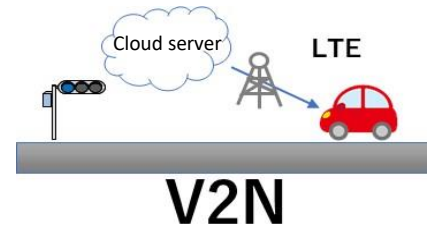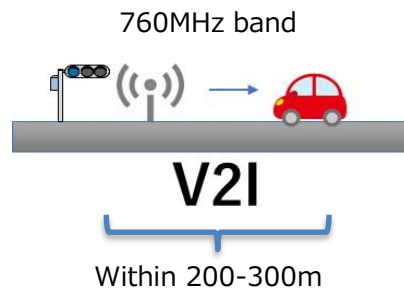
*ITS   : Intelligent Transport Systems
**V2I   : Vehicle to Infrastructure   ***V2N:Vehicle to Network

Aiming through 21FY FOTs
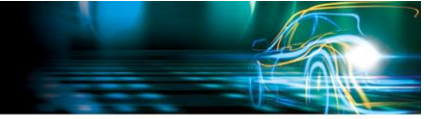
◆ **By utilizing traffic environment info., driver info. is provided, advanced driver assistance systems, and automated driving system application scenes are expanded.**
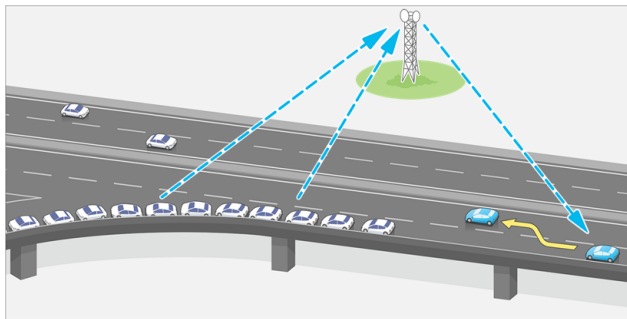
● **Driving support and autonomous driving on general roads using signal info. on a regional basis**
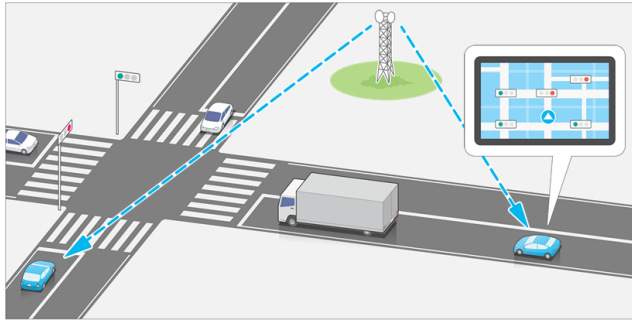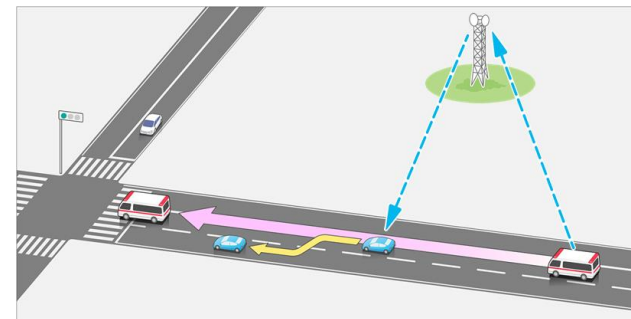
● **Predict early guerrilla rainstorms**
（Avoidance route, manual operation switching）
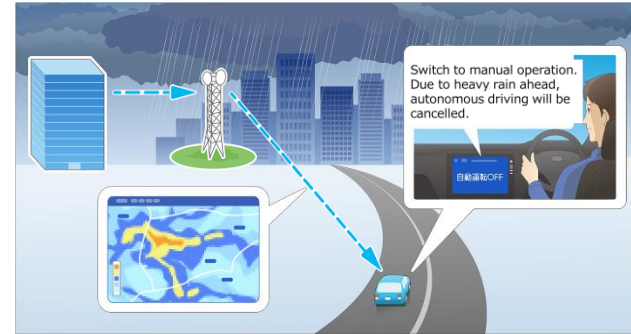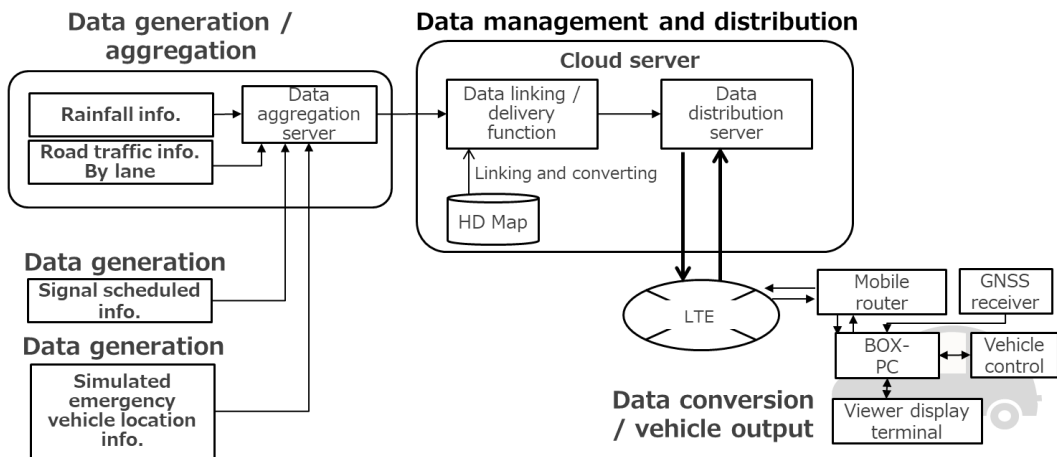
● **Smooth lane change by forecasting traffic lanes**

● **Warning and avoidance of approaching emergency vehicles**

◆ **Utilize new traffic environment info. to expand the operation scene of AD vehicles in the Tokyo waterfront area**

● **Building a new info. generation and distribution FOT environment in the Tokyo waterfront area through a public network (V2N *) in anticipation of practical use**

Data generation / aggregation

Data management and distribution

Cloud server

Rainfall info.

Road traffic info. By lane

Data aggregation server

Data linking / delivery function

Data distribution server

Linking and converting

HD Map

Data generation

Signal scheduled info.

Data generation

Simulated emergency vehicle location info.

LTE

Mobile router

GNSS receiver

BOX-PC

Vehicle control

Data conversion / vehicle output

Viewer display terminal

● **Participants**

Alphabetical order. A total of 22 institutions

*V2N: Vehicle to Network

SIP-adus
Workshop
2021

Thank you