



SIP-adus

-The challenges for Automated Driving Systems realization in Japan-

Seigo Kuzumaki

Program Director of SIP-adus

27 July 2020

SIP ; Strategic Innovation Promotion Program
adus ; Automated driving system for universal service



INDEX

1. Society 5.0 and ADS
2. Initiative of SIP-adus
3. SIP-adus activities
 - Dynamic map
 - FOT in Tokyo waterfront area
 - Safety assurance
 - Cybersecurity



Society 5.0

Data convergence

high degree of convergence between cyberspace (virtual space) and physical space (real space).

Economic advancement

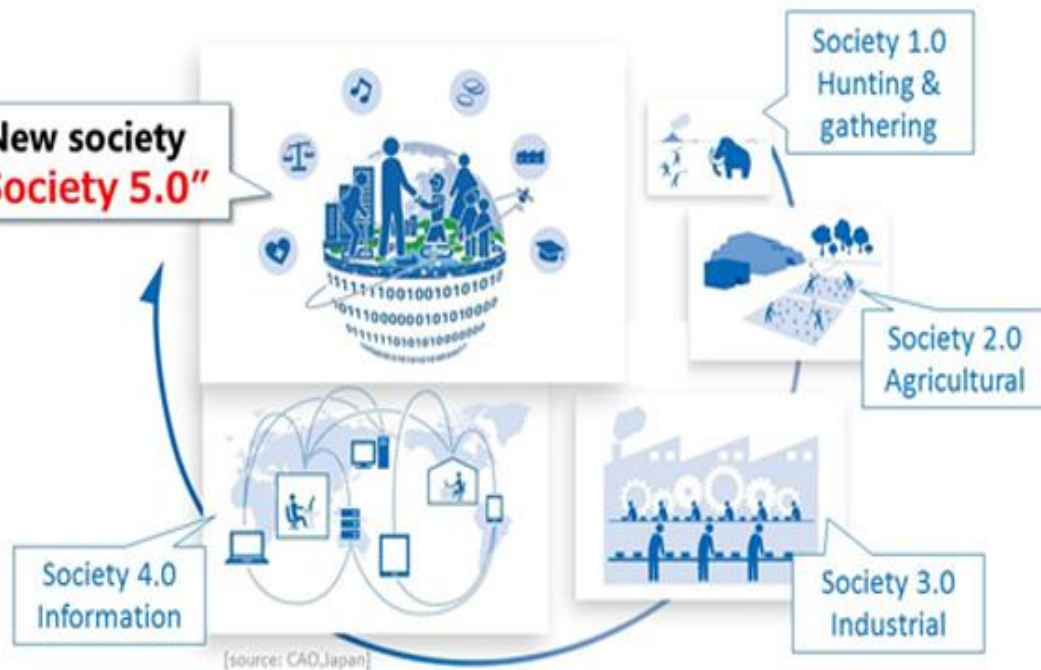
+

Solution of social problems

provision of products and services that are needed to the people that need them at the time they are needed

human-centered society in which anyone can enjoy a high quality of life full of vigor

New society
"Society 5.0"



(Cabinet office HP)

The challenge for Society 5.0 realization

Society 5.0

Resolution of Social problems &
Creation of New Value
by data usage and data collaboration



ADS: Automated driving system



To establish the database for ADS



To promote data usage and
data collaboration among
industry and government

SIP-adus Initiative

ADS (Automated Driving Systems)

Safe and secure mobility for all



Competition



Cooperation



➤ **Technology**

- Establishment of digital infrastructure
- Unification of data format and interface
- Safety assurance and cybersecurity etc.

➤ **Int. cooperation/Standardization**

➤ **Public acceptance**

➤ **Deregulation/Regulatory reform**

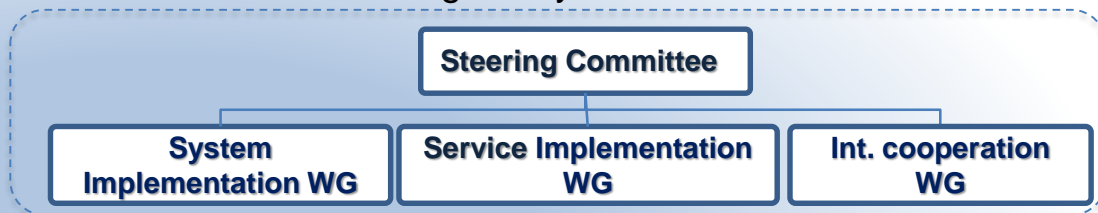
Promotion framework

- Promote cross-sector and **industry-academia-government collaboration**
- Intensive R&D program from **fundamental research to practical and commercialization**
- Promote Regulatory reform

IT strategy head office



**“The Public-Private
ITS Initiative/Roadmaps”**



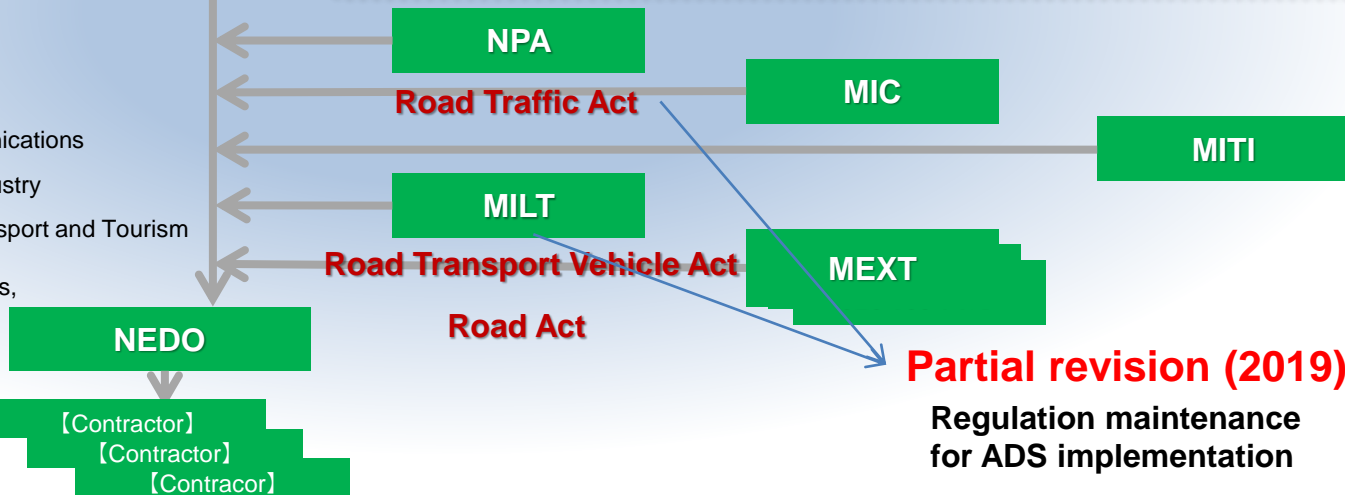
NPA ; National Police Agency

MIC ; Ministry of Internal Affairs & Communications

METI ; Ministry of Economy, Trade and industry

MLIT ; Ministry of Land, Infrastructure, Transport and Tourism

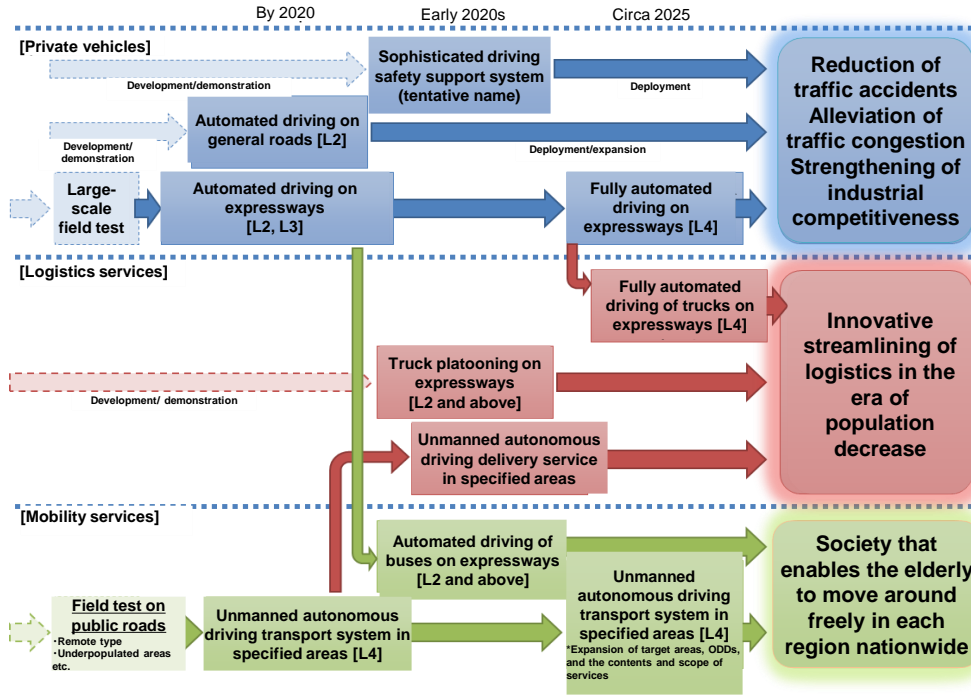
MEXT; Ministry of Education, Culture, Sports,
Science and Technology



Roadmap of ADS development

Public-Private ITS Initiative/Roadmaps 2019

Scenario for the commercialization and service of fully automated driving by 2025



- To establish the **cooperative areas** technologies essential for implementation by 2023
- To create **multiple example cases for commercialization through FOTs** by involving various **businesses and local government**

Vehicle Position Detection using HD 3D Map



GNSS

Laser Scanner(LiDAR)



Radar

Camera

Sensed Data

Compare to estimate the position

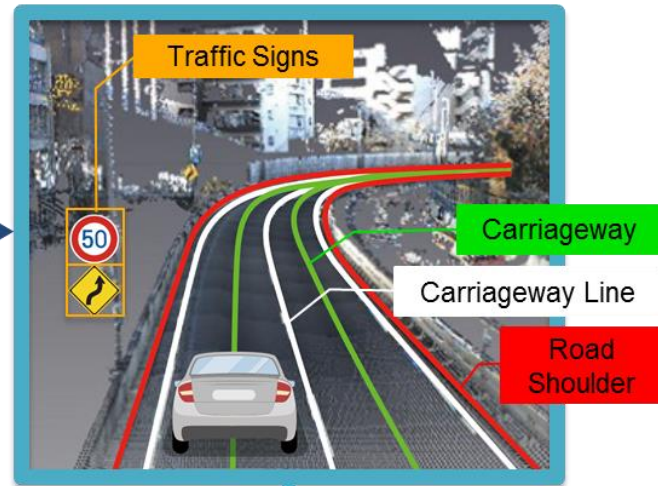
High Definition 3D Map



Carriageway

Carriageway Line

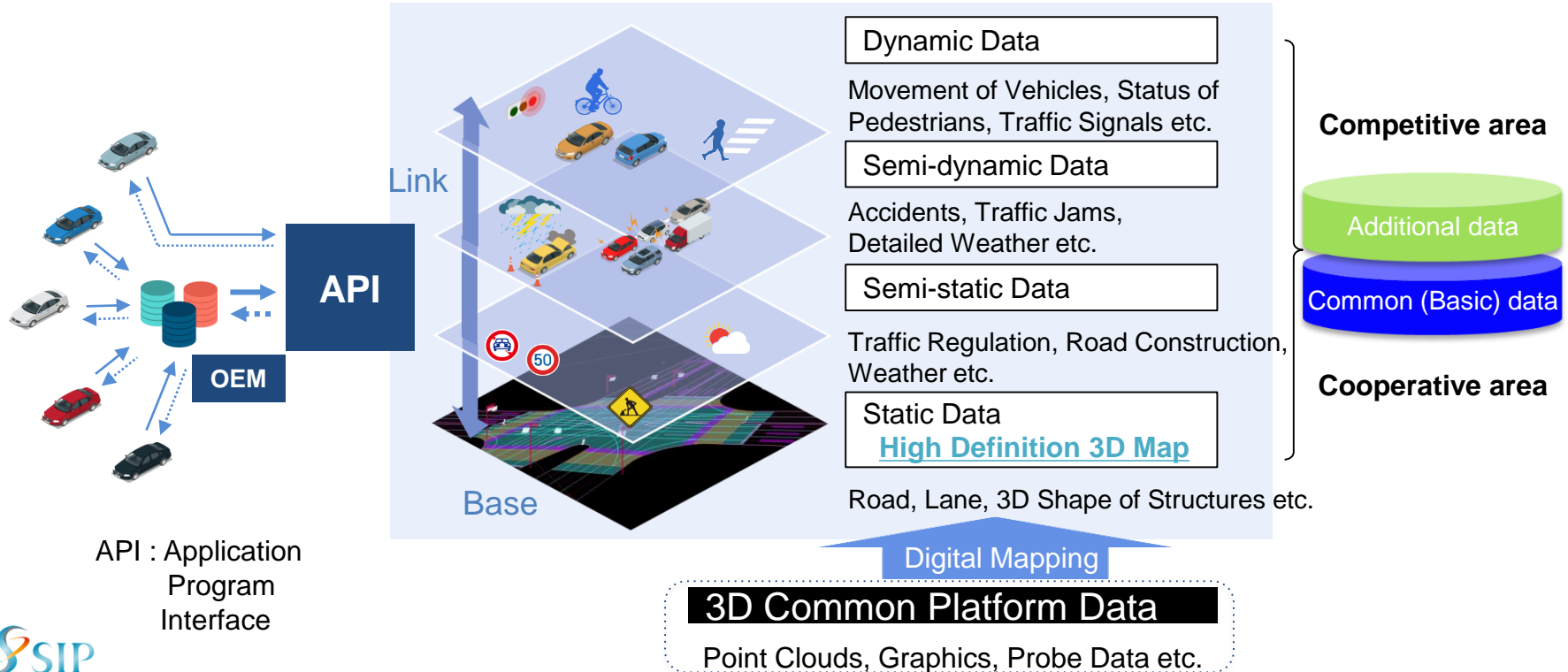
Road Shoulder



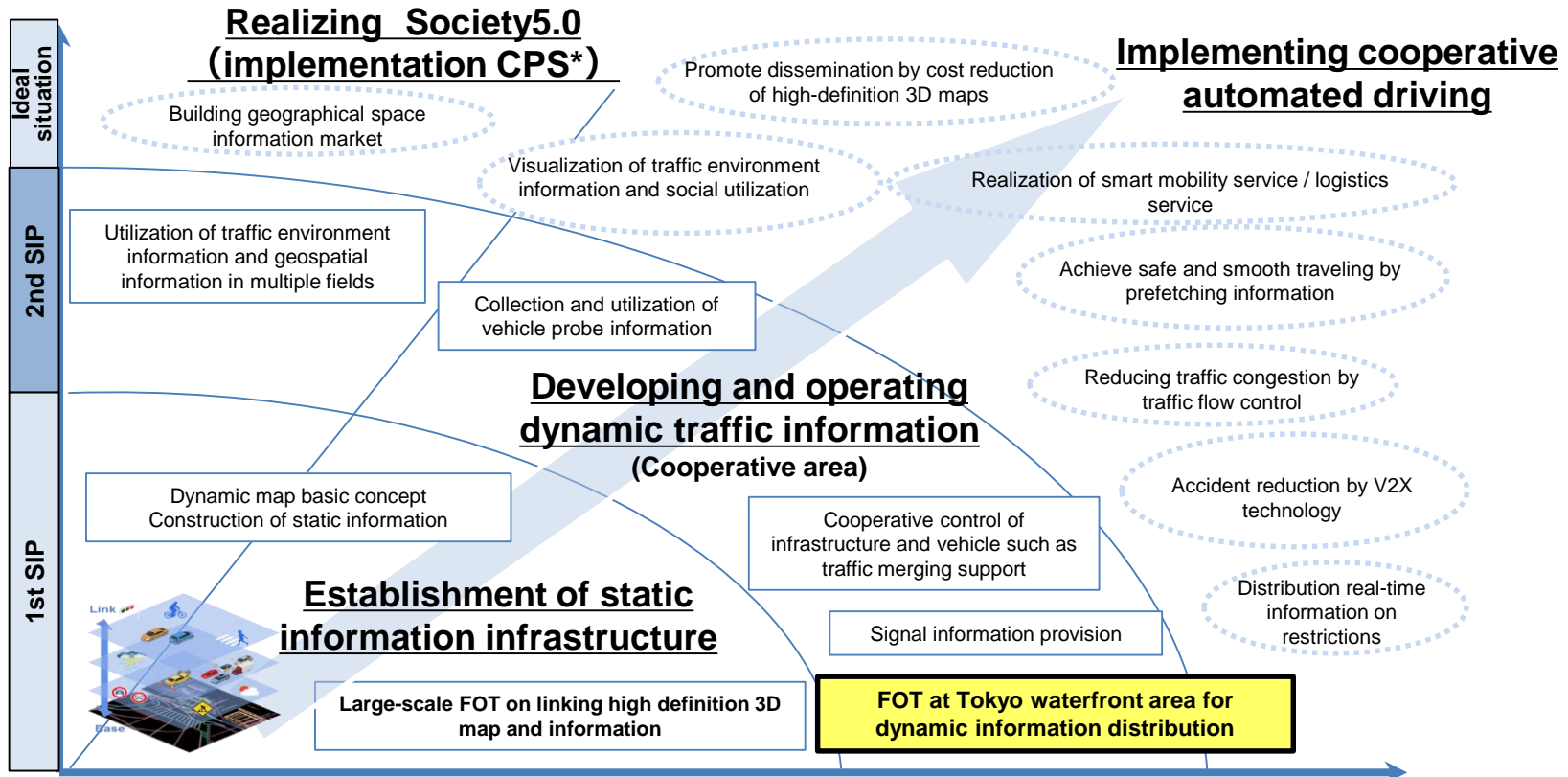
Estimate the position of the vehicle

Dynamic Map

To use combination database of high definition 3D map data with dynamic data such as traffic jam, road construction info.

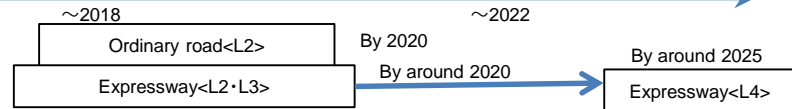


Building the Traffic Environmental Info. Framework

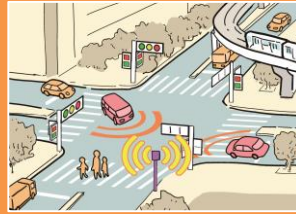


*CPS : Cyber Physical System

[Scenario for private car]

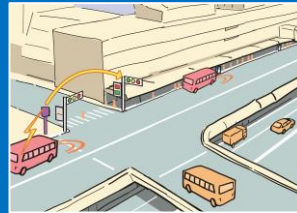


FOT in Tokyo waterfront city area



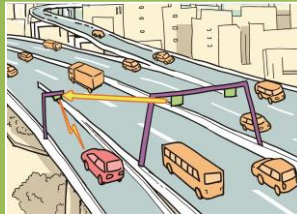
Tokyo Waterfront City area

- Signal display and change timing information via ITS infrastructure
- HD 3D map linked with signal info. etc



Haneda Airport area

- Signal display and change timing information via ITS infrastructure
- Magnetic marker
- Bus stop, designated lane for bus service



Metropolitan Express way

- Merging assistance on the main lane of highways
- ETC gate open/close info.
- Lane level traffic flow regulation info. Etc.

Period; October 2019 – march 2021

Participants of FOT

- ◆ Total 29 entities including OEMs, suppliers, venture companies and universities with 100 vehicles are participating in our FOT from Oct. 2019.



Safety assurance

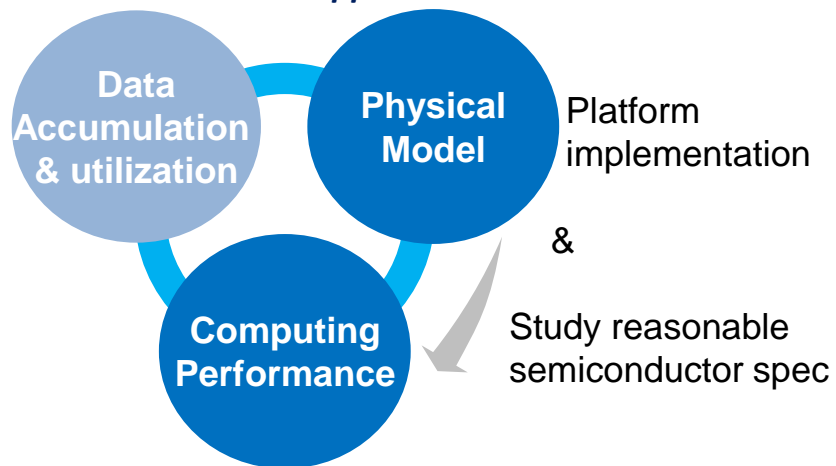
DIVP™ Driving Intelligence Validation Platform



- Scope & Objectives

DIVP™ scope

Trinitarian approach



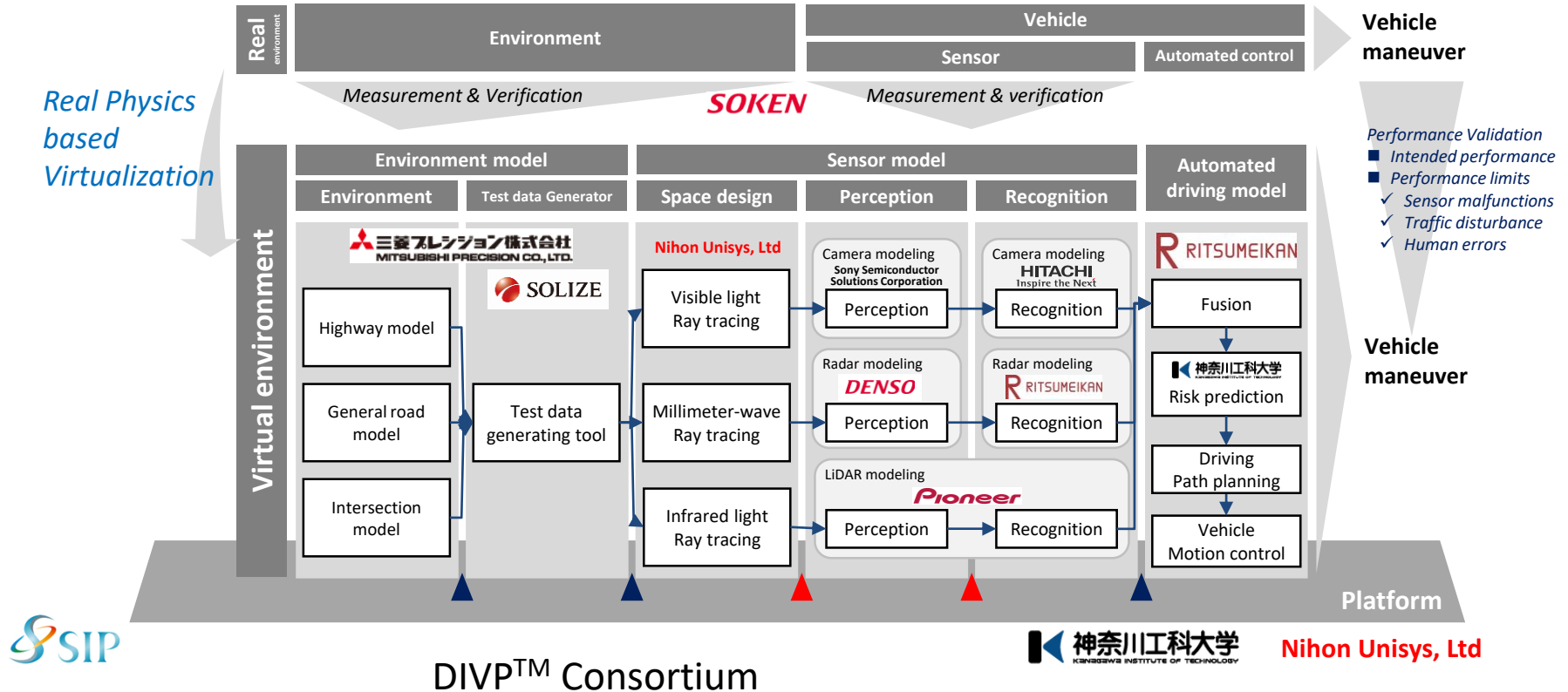
DIVP™ Objectives

- *Open Standard Interface*
- *Reference platform with reasonable verification level*
- *E & S pair model based approach (E : Environmental model, S : Sensor model)*

DIVP™ will improve Simulation based AD Safety validation for Consumer acceptable Safety assurance

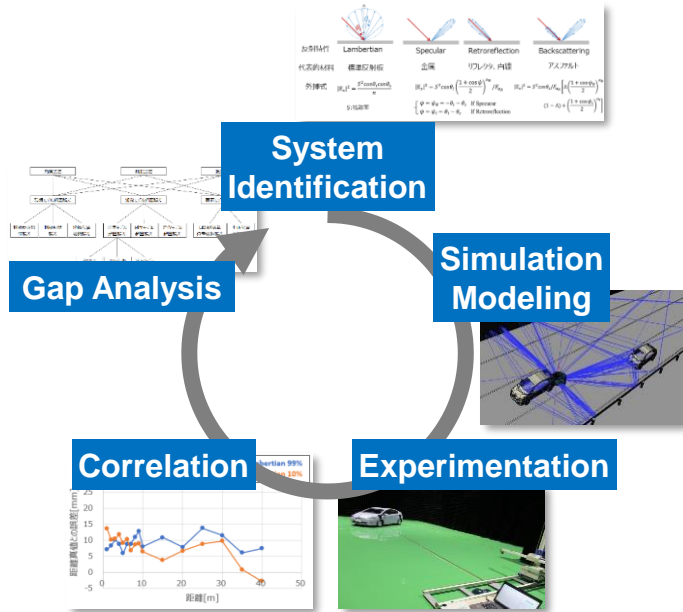
Sensor evaluation model & project structure

Designed research theme, Precisely Duplicate from Real to Virtual, and Verification of correlation level by 10-experts as DIVP™ Consortium

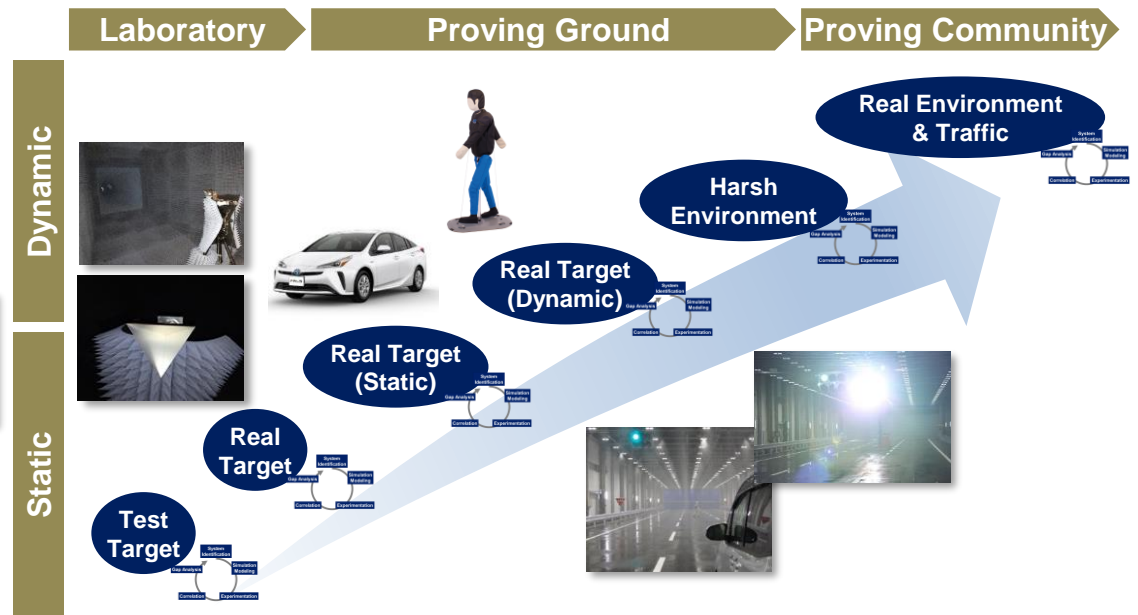


Physical modeling framework

Real physics based approach



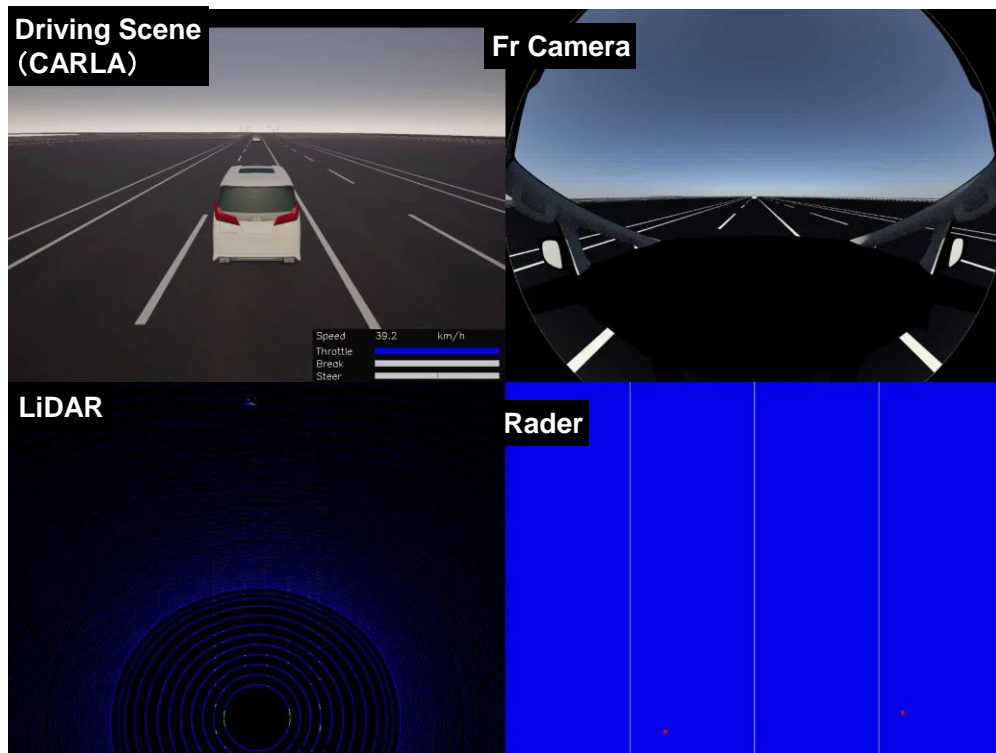
Enhancement roadmap



DIVP™ propose to collaborate Metrics leveling to meet to user demand

Physical modeling framework

- Perception model output (Sample)



Environmental model



Real

(Live streaming)

◇ **Status report meeting**
Nov.10.2020 @Tokyo

【Presenters】

SIP-adus contract researches

SIP-adus related members

【Language】

Japanese/English

Simultaneous interpretation

+

Virtual

◇ **Online symposium**
Nov.10~12.2020 @Website

【Presenters】

Experts form overseas

SIP-adus contract researches

SIP-adus related members etc.

【Language】

English



<https://en.sip-adus.go.jp>

Thank you