

National Research Project on Automated Driving to realize Society 5.0 - SIP-adus in Japan -

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SIP ; Strategic Innovation Promotion Program adus ; Automated driving for universal services

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Federal Ministry
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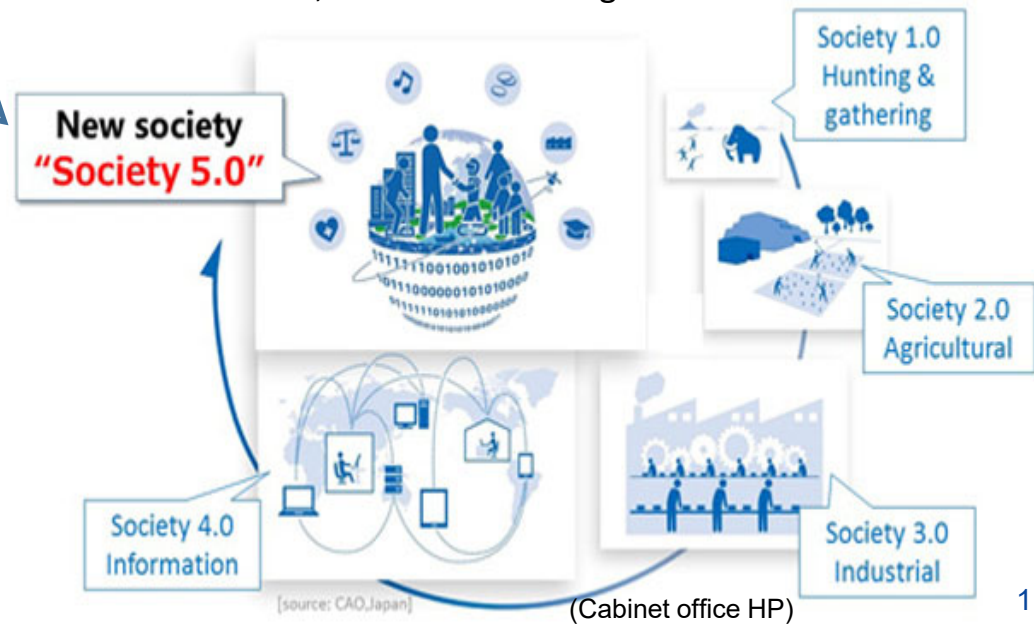
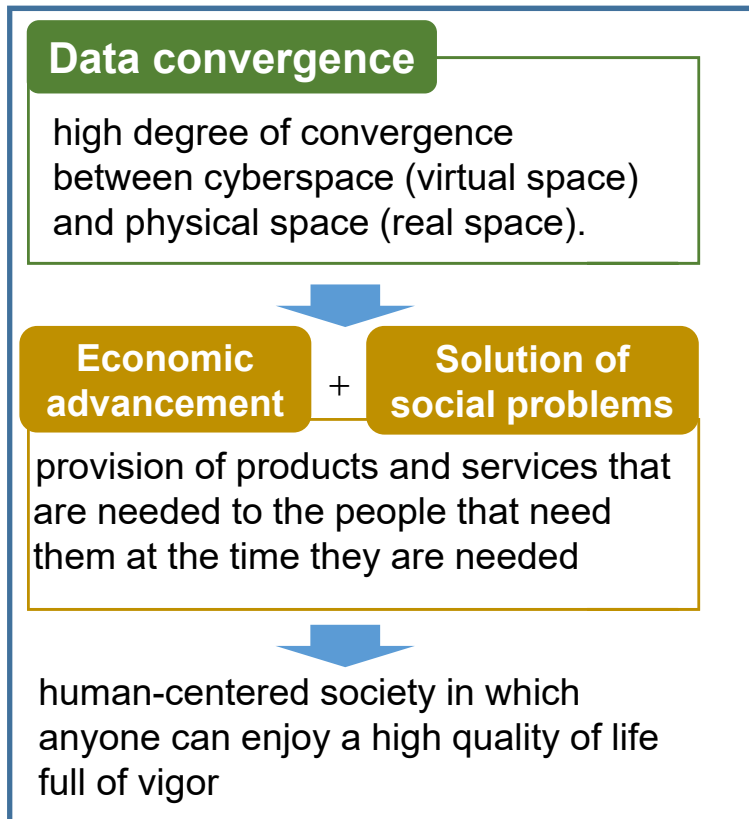


Society 5.0

 **S**trategic **I**nnovation Promotion **P**rogram

SIP 2nd FY2018~FY2022

12 themes on going (SIP-adus is one of them)
adus ; Automated driving for universal services



Outline of SIP

- **Intensive R&D program**
 - ✓ promote 5-year R&D (FY2018 - FY2022)
 - ✓ from fundamental research to social implementation and commercialization
- **Promote cross-sector collaboration**
 - ✓ enhancing cross-ministerial cooperation
 - ✓ promote industry-academia-government collaboration
- **Leadership and total Budget**
 - ✓ CSTI appointed Program Directors and allocates the budget for each research theme.*

* ¥28bil in total per year for SIP 12 themes



Cross-ministerial Strategic Innovation Promotion Program

Council for Science, Technology, and Innovation

Governing Board
(CSTI Executive Members)

Executive Director of SIP (Assigned from 2018)

Program Director (PD)
(assigned to Cabinet Office for each policy issue)

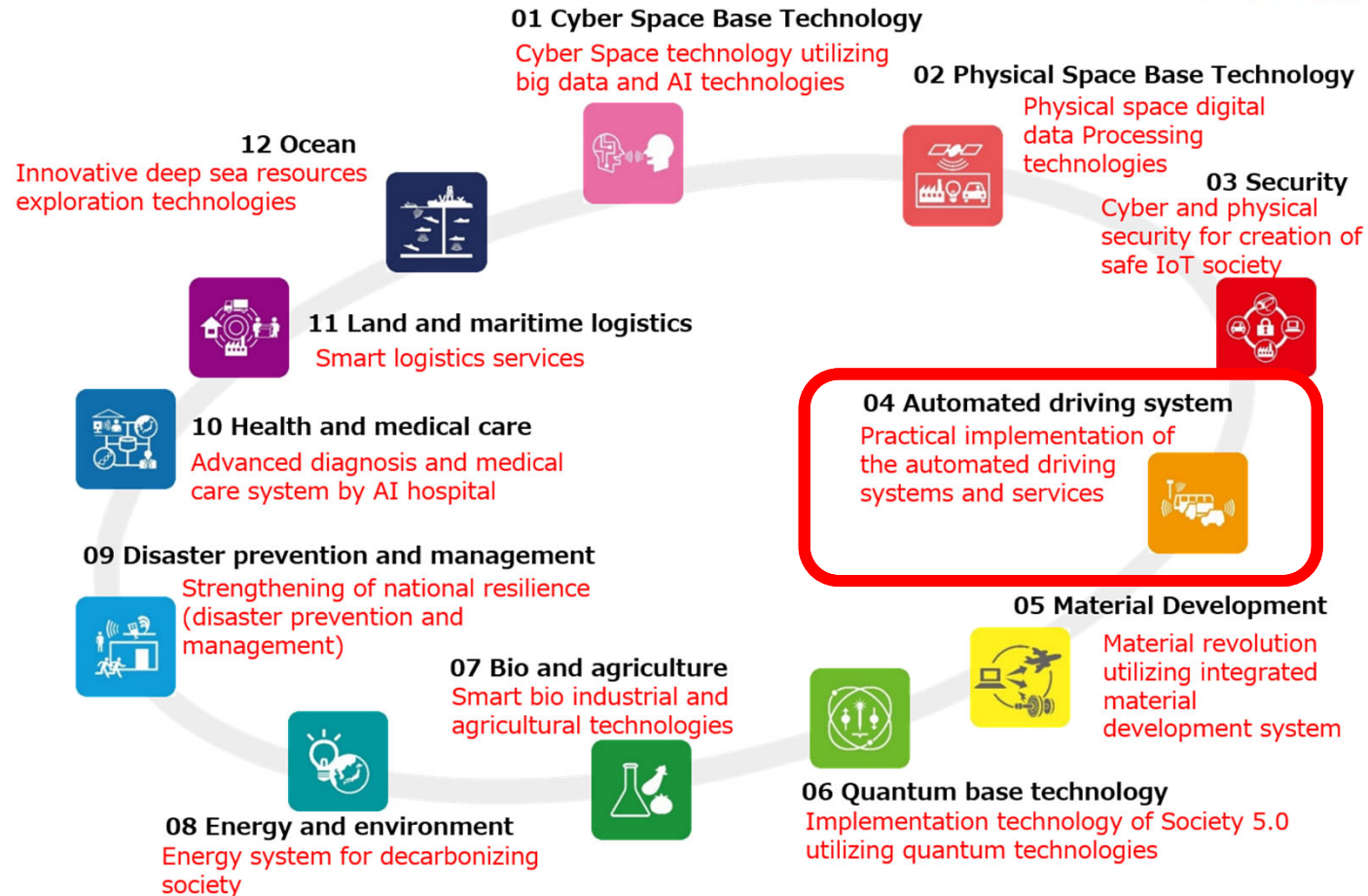
Steering Committee

PD (Chairman), relevant ministries,
experts, management agency,
Cabinet Office (secretariat)

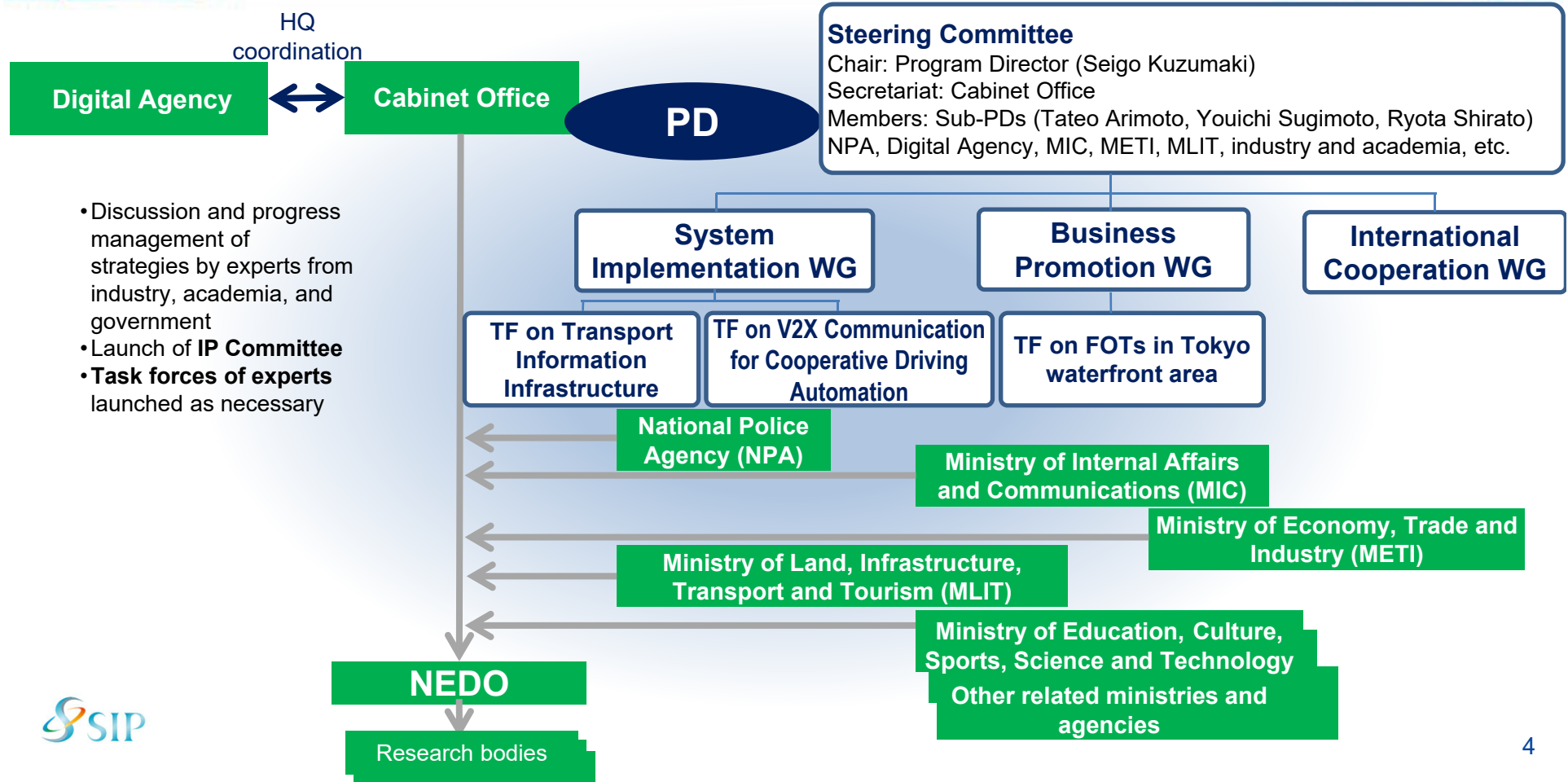
Related governmental research institutes,
Universities, private companies, etc.



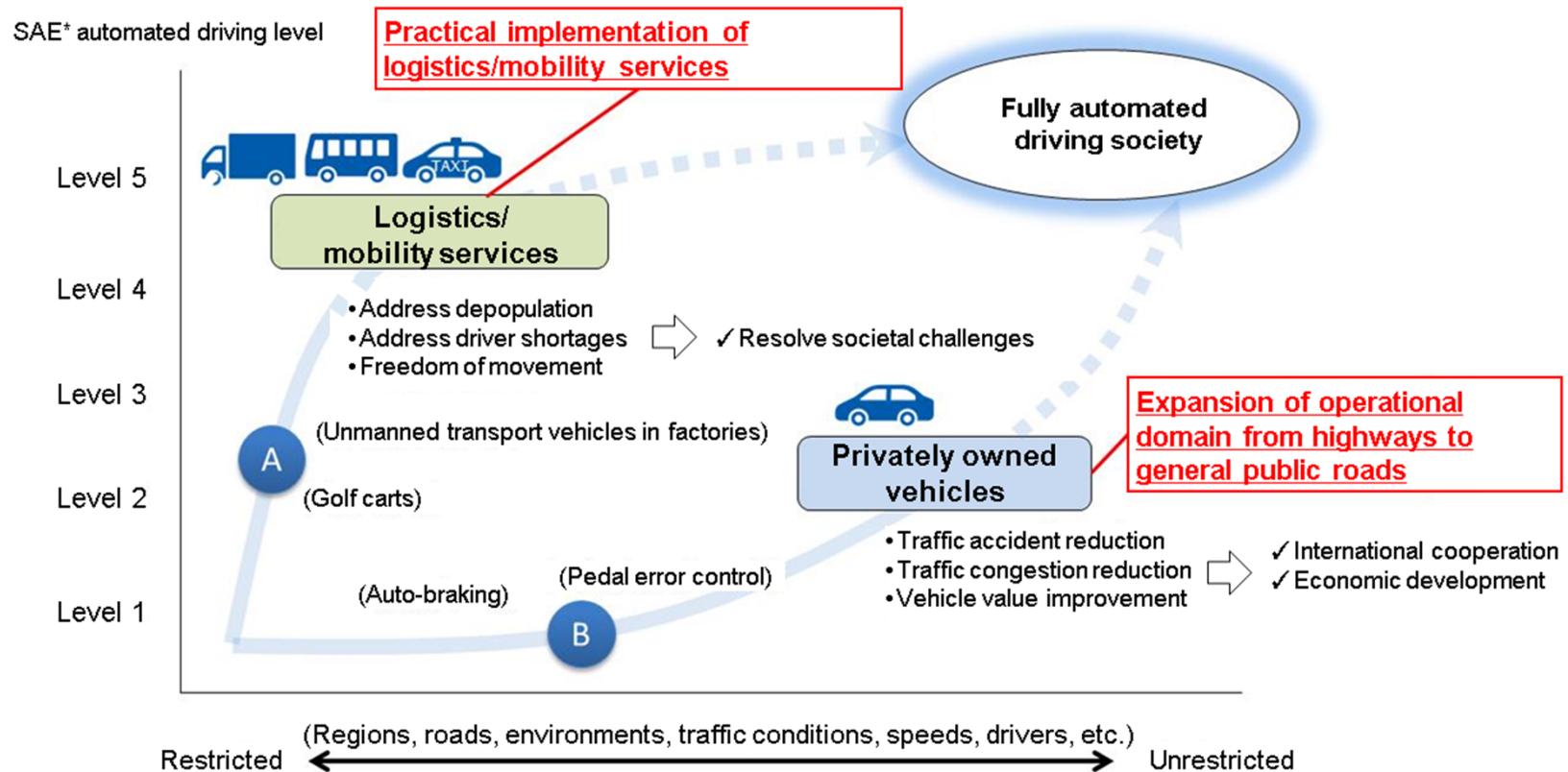
2nd phase of SIP (FY2018-2022) - 12 Programs



Promoting structure of SIP-adus

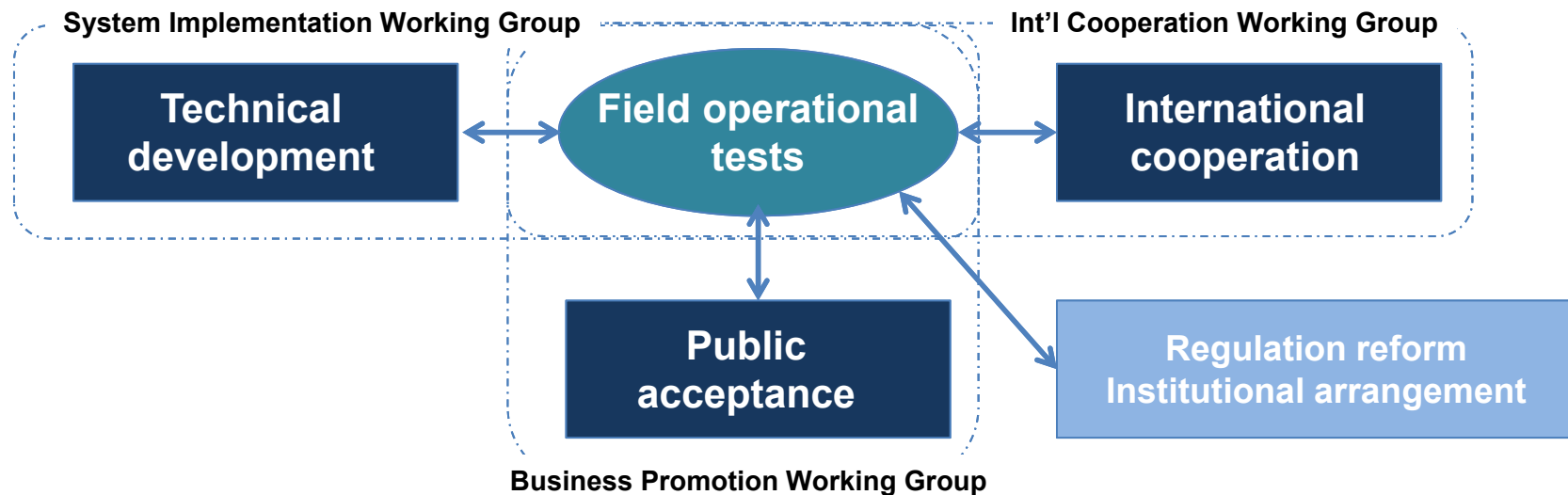


Overview of 2nd Phase of SIP-adus



Focus themes

【4 pillars】

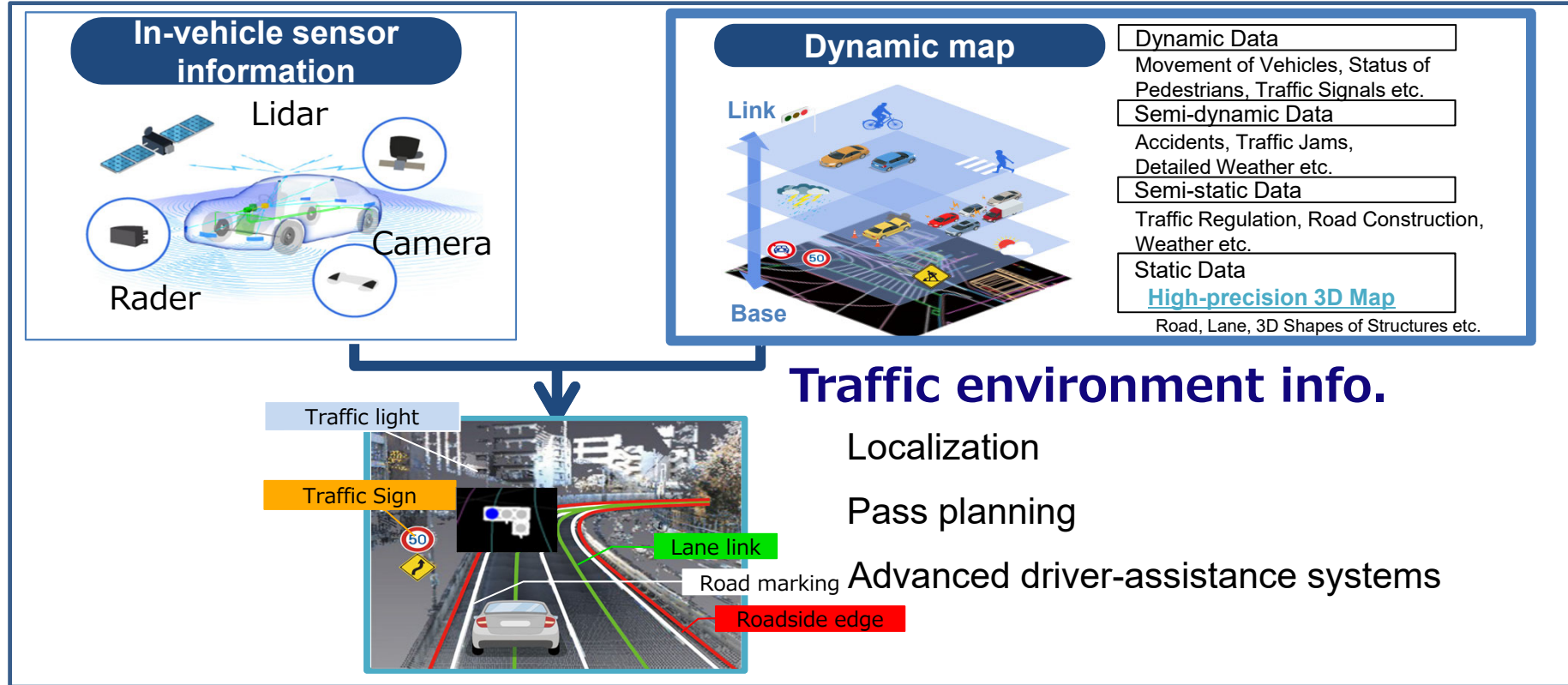


【Focus themes】

- (I) Traffic environment information (Dynamic map)
- (II) Traffic environment data portal
- (III) Virtual validation platform for ADS safety assurance
- (IV) Evaluation methodology of Intrusion detection system

Dynamic map

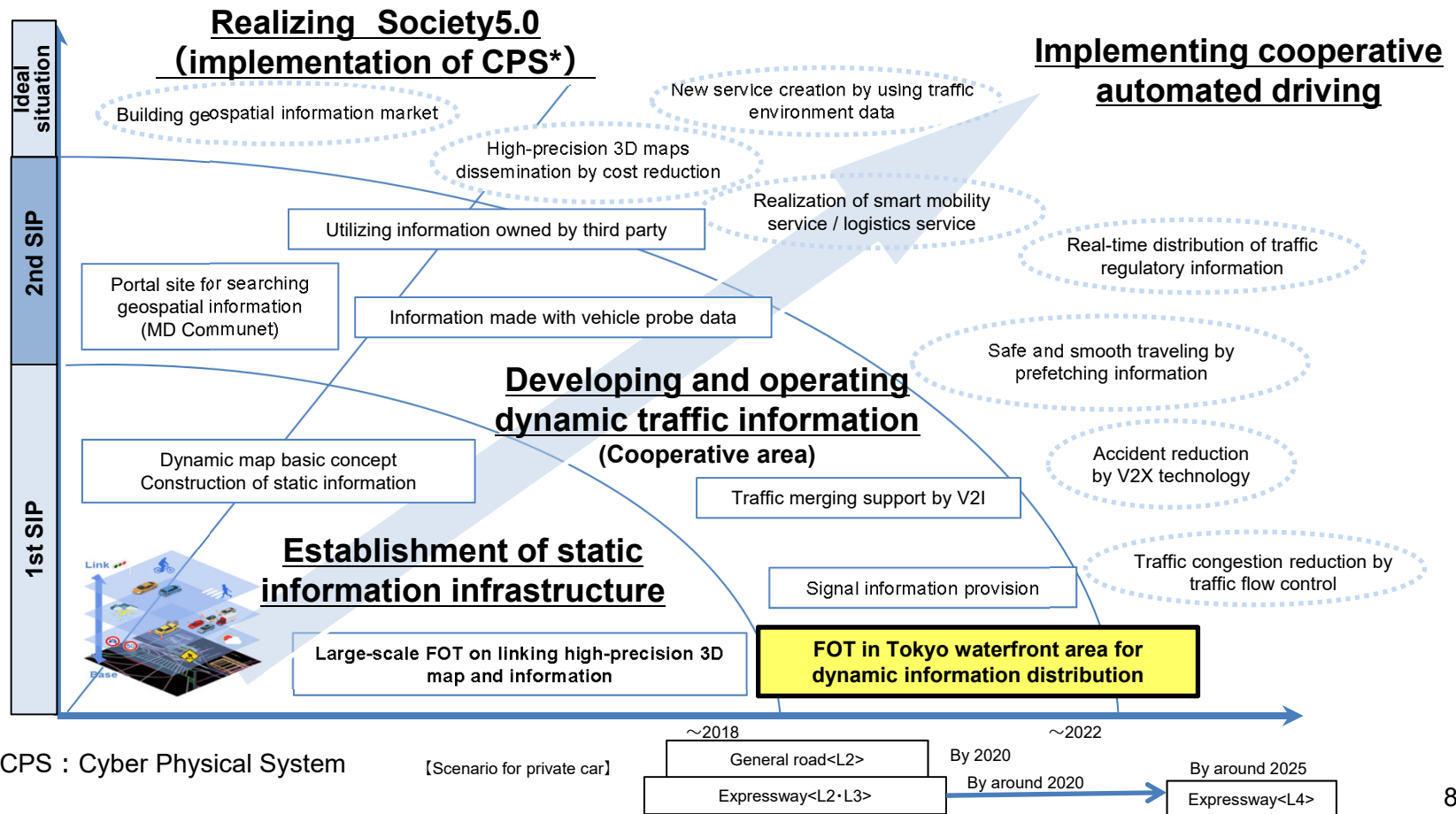
Structure of ADS



Technology development in cooperative areas

Realization of **S**ociety 5.0

Building the Traffic Environment Info. Framework



FOTs in Tokyo waterfront area

- Promoting standardization in an internationally open experimental environment under public roads and mixed traffic
- Promoting R&D by drawing out private investment through a matching fund format with industry-academia-government collaboration



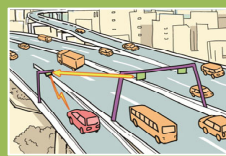
(a) Tokyo Waterfront City area

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



(b) Haneda Airport area

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



(c) Metropolitan Expressway

- Merging assistance at main lanes of expressway
- ETC gate open/close info.
- Lane level traffic flow regulation info. etc.

- ◆ From this Fall, FOT will be expanded to provide **dynamic traffic information from a wide area** of infrastructure via **V2N** with the aim of further expanding the operational design domain (ODD) of ADV and mobility / logistics services.

Participants of FOT in Tokyo waterfront area

- 22 institutions including domestic and foreign automobile manufacturers, auto parts suppliers, universities, start-ups and others



※As of July 2021

Alphabetical order. A total of 22 institutions

Safety Assurance

- Developing a simulation platform that replaces real vehicle evaluations with sensor modelling that is highly consistent with real phenomena, in order to perform reproducible safety evaluations of automated driving in various traffic environments.

Real experimental test



Camera



Radar



LiDAR



Virtual test



SILS / MILS

(Software in the Loop / Model in the Loop)

Connect



HILS

(Hardware in the Loop)



Connect



VILS

(Vehicle in the Loop)

Highly consistent
sensor modeling

Simulation evaluation of Tokyo waterfront area

- **Build Odaiba Virtual-PG environment**
 - ✓ **Modeling of FOTs in Tokyo waterfront area**
 - ✓ Model building of traffic participants (3D model) pedestrian/bicycle/vehicle etc.
 - ✓ **Reproduction of weather conditions** (sunlight, rain, nighttime)
- **Evaluate tool usability and simulation results**
 - ✓ Evaluation of scenario setting tool including traffic participants
 - ✓ Comparative evaluation of sensor detection data and simulation



Japan-Germany research cooperation



Start from September 2019

Human Factors



Impact Assessment

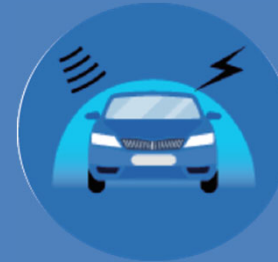


**JPN-GER
Cooperation**

Safety Assurance



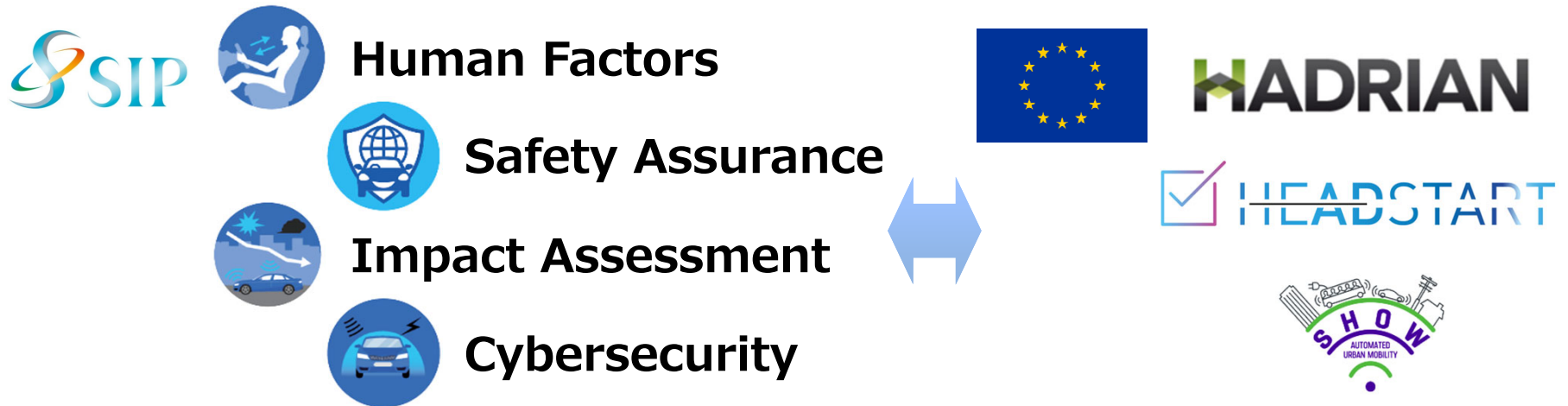
Cybersecurity



Start from October 2020

Start from November 2020

Japan-EU research cooperation



SIP-adus Workshop 2021



✓ **Date : November 09-10, 2021**

✓ **Format : Virtual conference**

✓ All sessions will be streamed online, additionally streamed in Central European Time and Eastern Standard Time for worldwide participants.

Plenary Session(provisional)

as of September 9

	November 09 (start at 9:00)	November 10 (start at 9:00)
AM (JST)	Opening / Regional Activities	Dynamic Map
	Impact Assessment	Connected Vehicles
PM (JST)	Service and Business Implementation / FOTs + Human Factors (Joint Session)	Safety Assurance
	Japanese Government	Cybersecurity
		Closing
For European Region	start at 9:30(CET)/17:30(JST)	start at 9:30(CET)/17:30(JST)
For Americas	start at 11:00(EST)/*1:00(JST)	start at 11:00(EST)/*1:00(JST)

* The time will be the next day 15

SIP-adus Workshop 2021



Registration has been opened!

- **Plenary Sessions :**
November 09-10, 2021 (Virtual conference)
- **Breakout workshops :**
Schedule to be announced for each theme

For further information, please visit our website
<https://en.sip-adus.go.jp/evt/workshop2021/>