Strategic session 3 –

International cooperation

Young Tae Kim
Secretary-General, International Transport Forum

Seigo Kuzumaki
Executive General Manager, Advanced R&D and Engineering Compa ny, Toyota Motor Corporation / Program Director, SIP-adus

Kirsten McKillop
Director Automated Vehicles, National Transport Commission, Austr alia

Kevin Dopart
Program Manager Vehicle Safety & Automation, ITS Joint Program O ffice, US Department of Transport

International Transport Forum

Global dialogue for better transport

ITF Korea PRESIDENCY 2019

EUCAD 2019 3 April 2019, Brussels

International Cooperation

Dr. Young Tae KIM
Secretary-General

OECD

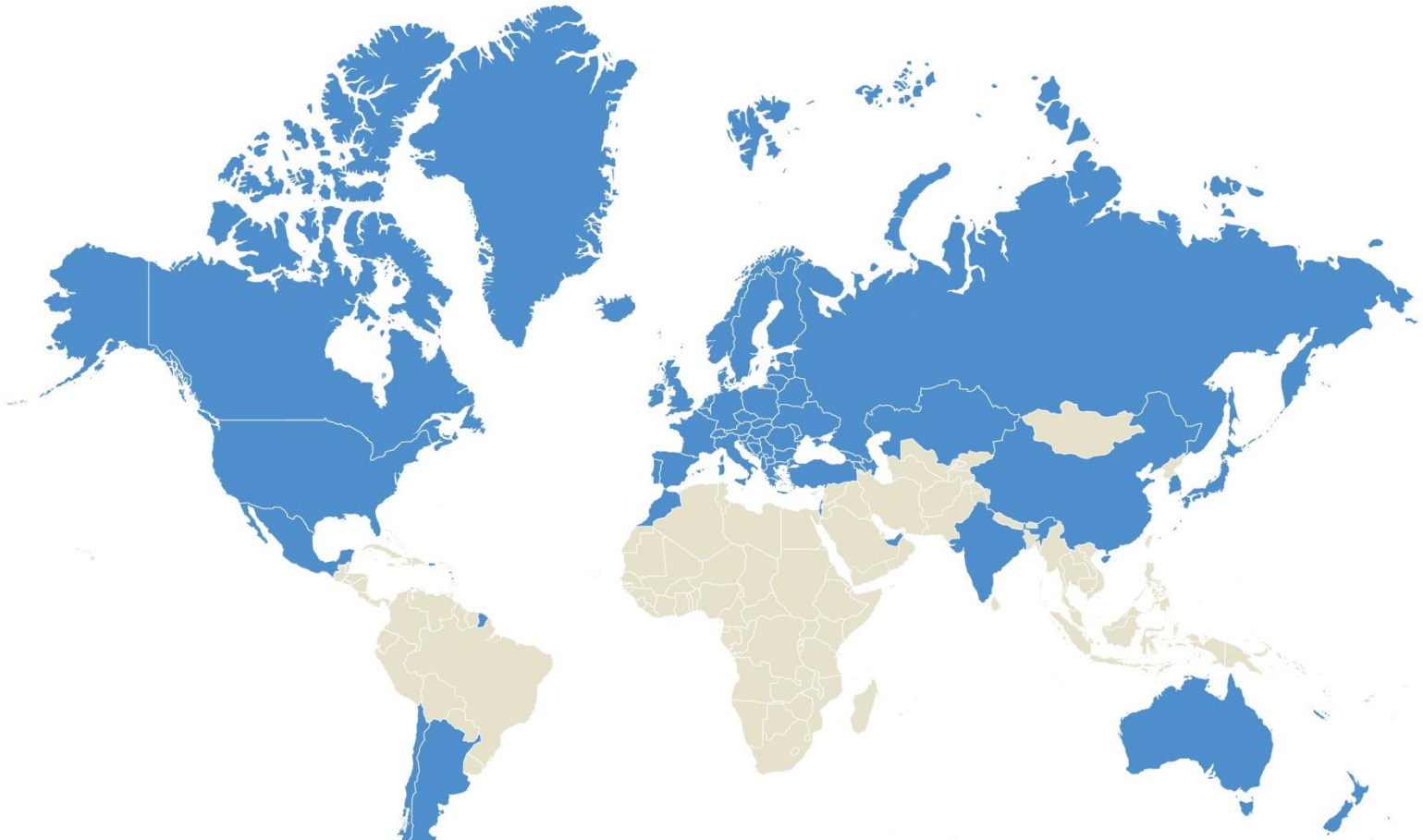
Contents

I. ITF: a Quick Overview

The ITF is the only global body that covers all transport modes

- **Intergovernmental organisation** with 59 member countries
- **Think tank and platform**
- **Annual Summit** of transport ministers
- Mission is to foster a **deeper understanding** of the role of transport in **economic** growth, **environmental** sustainability and **social** inclusion

ITF Members as of April 2019



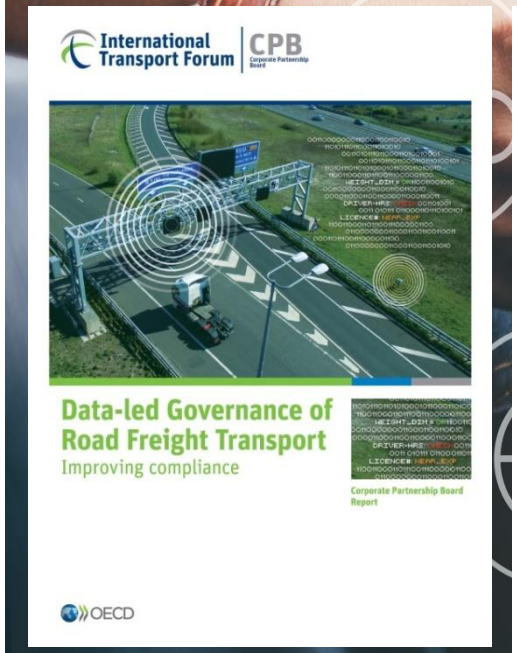
Presidency countries

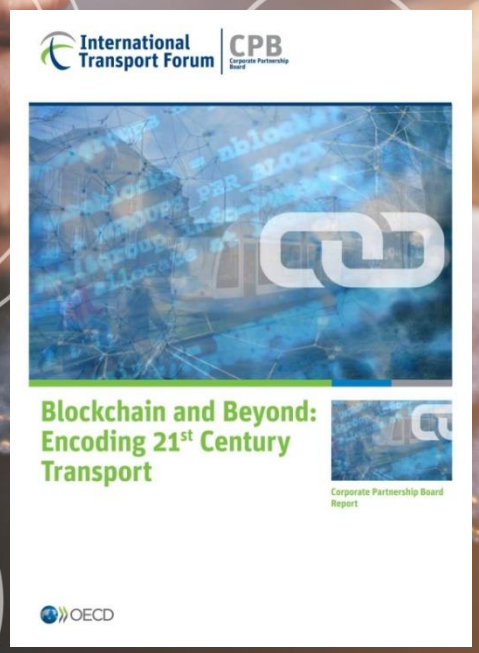
2019 2020 2021 2022

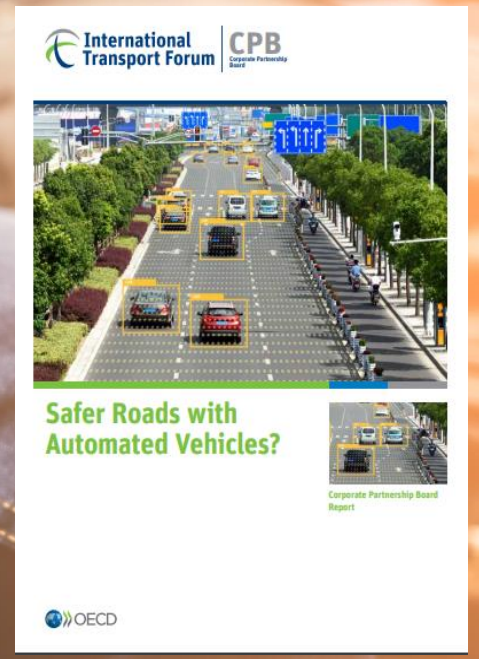
Ongoing exchange with

Five Major Themes

ITF's works on Digitalisation







II. Various Aspects on Connected & Automated Driving

Technology	***- Smart communication: V2V, V2I*** ***- High precision map*** ***- Efficient control system*** ***- Cybersecurity***
Law and other rules	***- Vehicle standards*** ***- Facilitation of driving on the roads*** ***- Communication and insurance***
Ethical question	***- Information sharing*** ***- Algorithm on the basis of consensus***
Connectivity and extension	***- Disconnectivity coming from connectivity: decentralization*** ***- Connecting transport to other sectors***

III. International Cases

Declaration of Amsterdam

Cooperation in the field of connected & automated driving

SUPPORTING the following objectives:

a. to work towards a **coherent European framework** for the deployment of interoperable **connected & automated driving**, which should be available, if possible, by 2019;

b. to bring together developments of connected and automated driving in order to reach their full potential to **improve road safety, human health, traffic flows, and to reduce the environmental impact of road transport**;

c. to adopt a **"learning by experience" approach**, including, where possible, cross-border cooperation, sharing and expanding knowledge on connected & automated driving and to develop practical guidelines to ensure interoperability of systems and services;

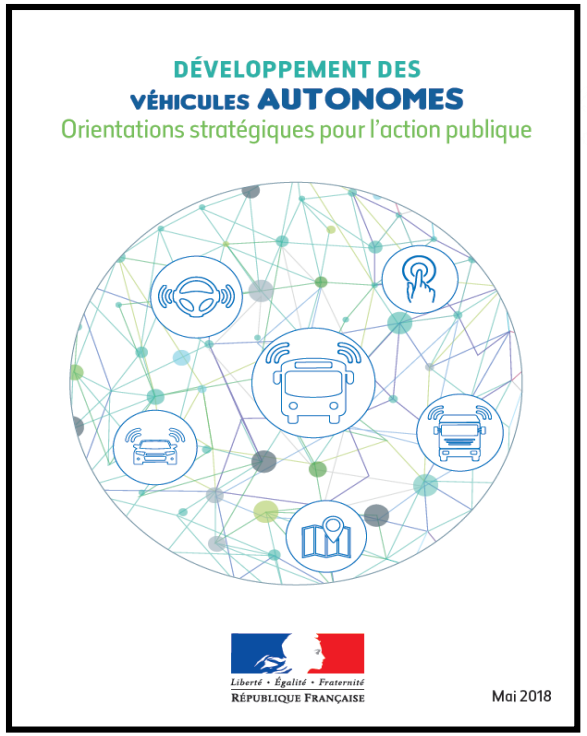
d. to support **further innovation** in connected & automated vehicle technologies to strengthen the global market position of European industry; and

e. to ensure **data protection and privacy**.

Minister's Speech at UN Inland & Transport Committee, Geneva – 19 February 2019

- **Smart Mobility: safety is the top priority!**
- Accidents involving self-driving cars will make the front page.
- Collectively testing and gaining experience in trials and experiments requires legislative scope for experimentation. So our motto must be '**Safe and responsible testing**'. Let's tackle that jointly, across borders. I'm happy to make Dutch expertise available, and for our part we're keen to learn from you.

French AD strategy at a glance



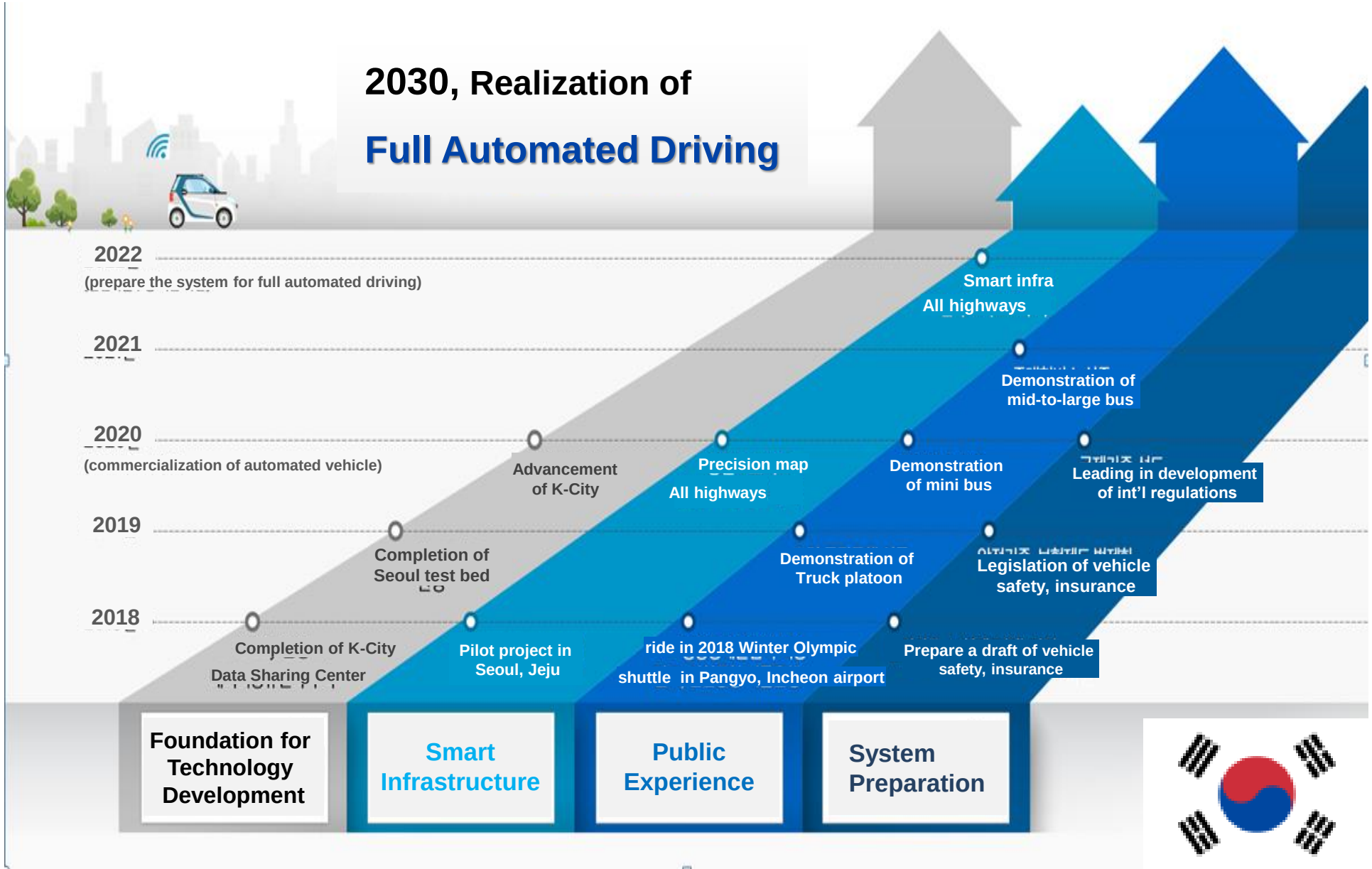
Key priorities :

- Foster testing
- Adapt driving rules
- Adapt responsability rules
- Upgrade safety validation / approval framework
- Assess needs and challenges of connectivity for AD
- Assess acceptance challenges
- Integrate AD in local mobility policies
- Assess and prepare skills adaptation

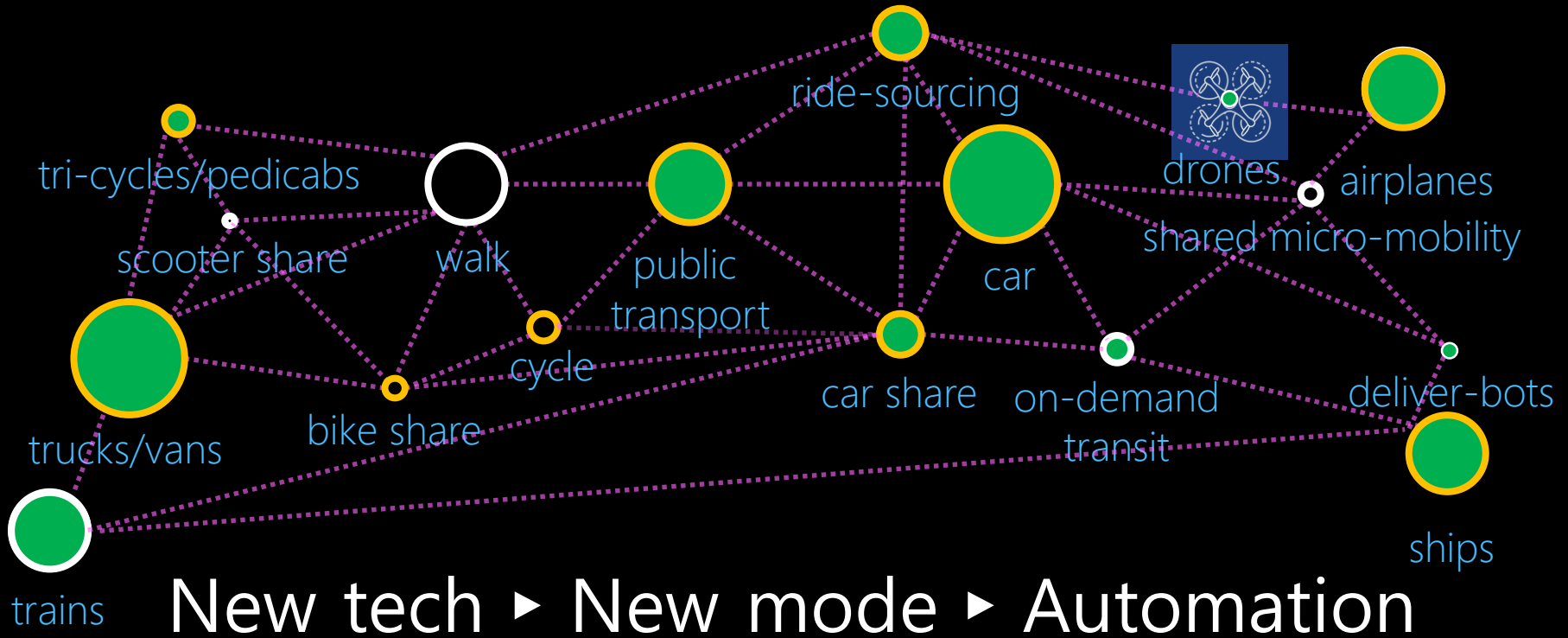
Main milestone = 2020-2021 : regulatory framework and service deployment for highly automated transport (public, shared) on pre-defined paths

Roadmap for Actions

A Leader in Automated Vehicles, along with private sectors.



IV. A Way Forward



New tech ▸ New mode ▸ Automation

next step: artificial intelligence

Collective Efforts for a Success

Discussion & Research

- Main international platforms: ITF, UNECE, ITS World Congress
- Research oriented platforms: TRB, TRA, WCTRS, ECTRI

Rule making

- International: EC, UNECE, ISO, ITU
- Domestic: National legislation compatible with international standards

* EC funding for holistic approach is crucial

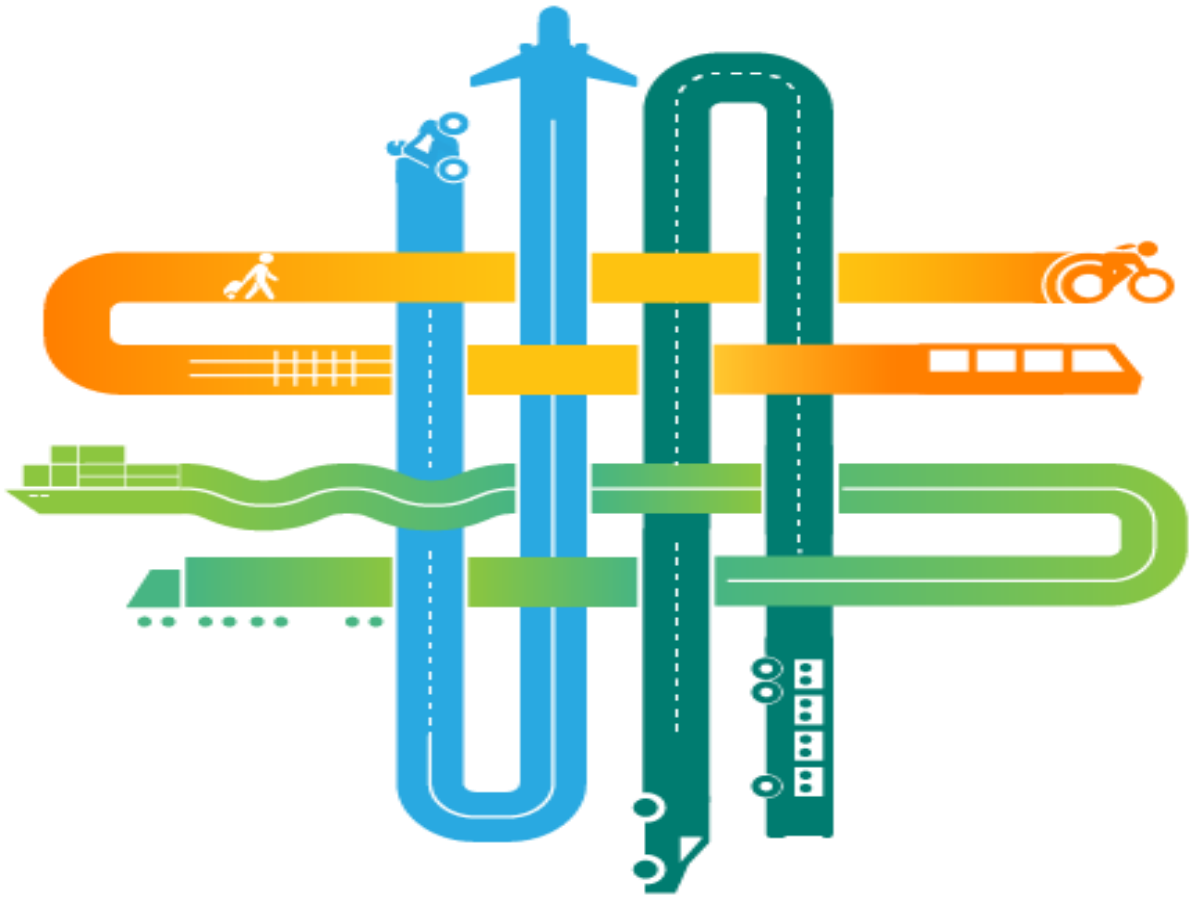
Horizon Europe proposed by EU (2021-2027, 100 billion euros for research and innovation)

International Transport Forum 2019 Summit

ITF Korea PRESIDENCY 2019

TRANSPORT CONNECTIVITY

for Regional Integration



22-24 May

Leipzig, Germany

OECD

A N D,
Under Irish Presidency

- May 27–29, 2020
- Leipzig, Germany
- ITF 2020 Summit: Transport Innovation for Sustainable Development

International Transport Forum

Thank you

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SIP Automated Driving System

SIP-adus ; Automated Driving System for universal service

Seigo KUZUMAKI
Program Director of SIP-adus

3 April 2019

SIP

Cabinet Office

Society 5.0

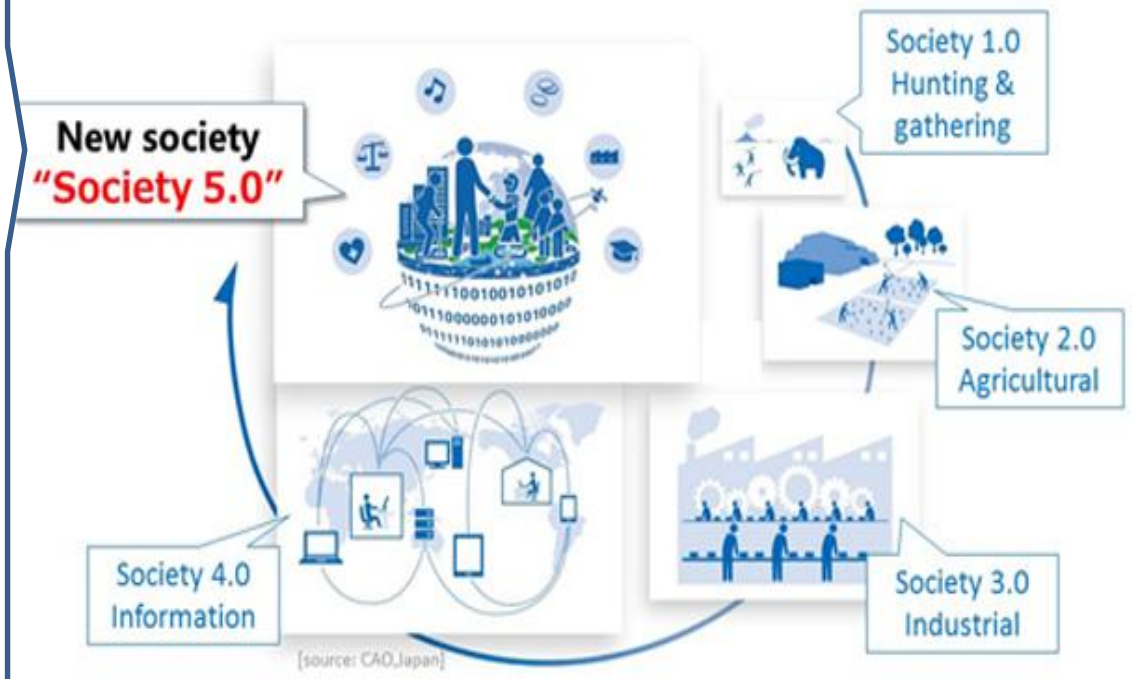
Data convergence

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

Economic adva ncement + **Solution of social problems**

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

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



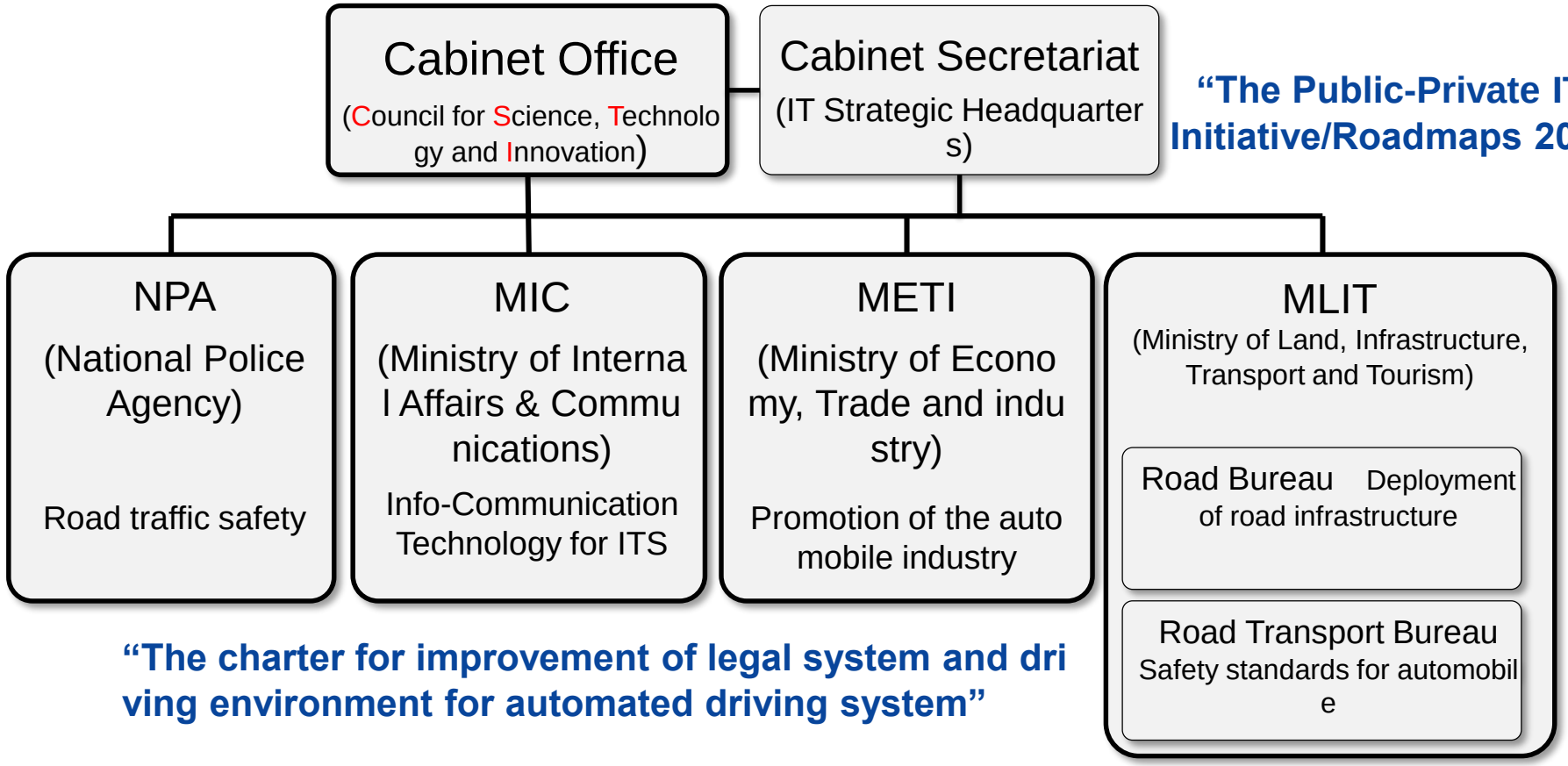
(Cabinet office HP)

Outline of SIP2

- **Intensive R&D program**
  - ✓ promote 5-years R&D (FY2018 - FY2022)
  - ✓ from fundamental research to practical 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.*

  * \50bil in total per year
  (65% for SIP 12 themes, 35% for medical R&D)

Promotion framework of Japanese Government

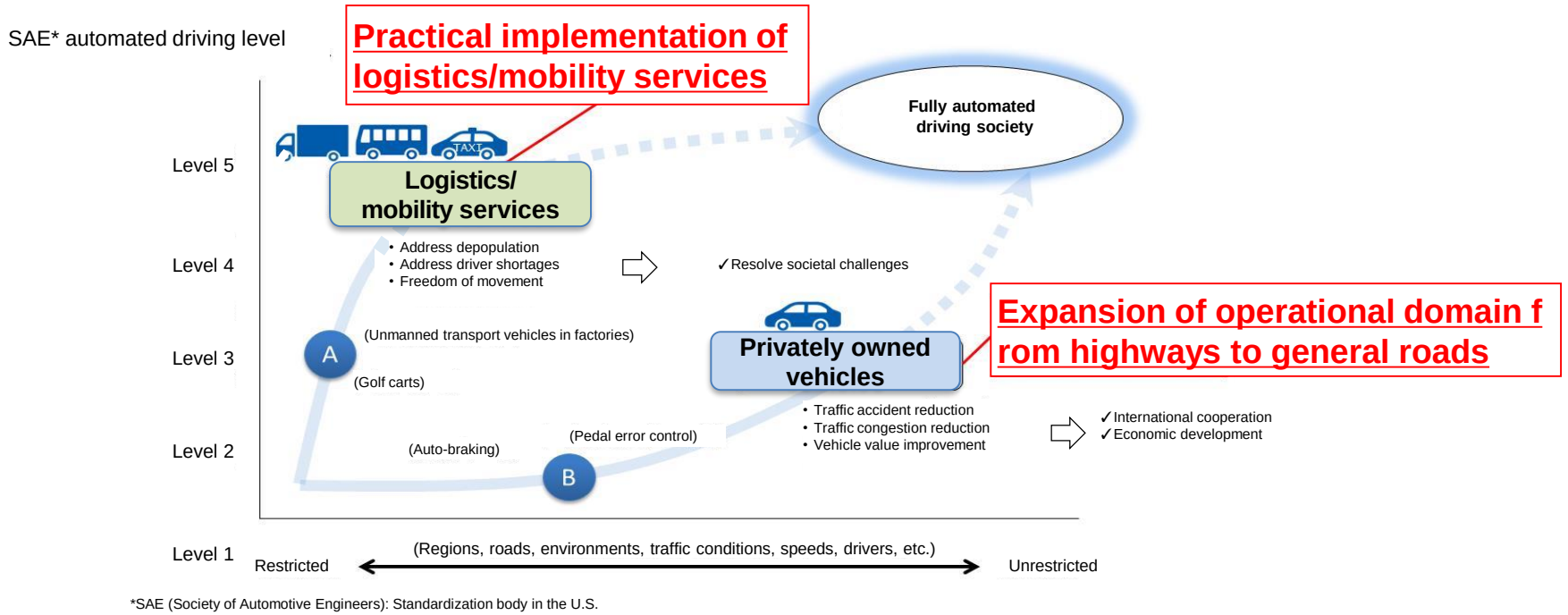


"The Public-Private ITS Initiative/Roadmaps 2018"

"The charter for improvement of legal system and driving environment for automated driving system"

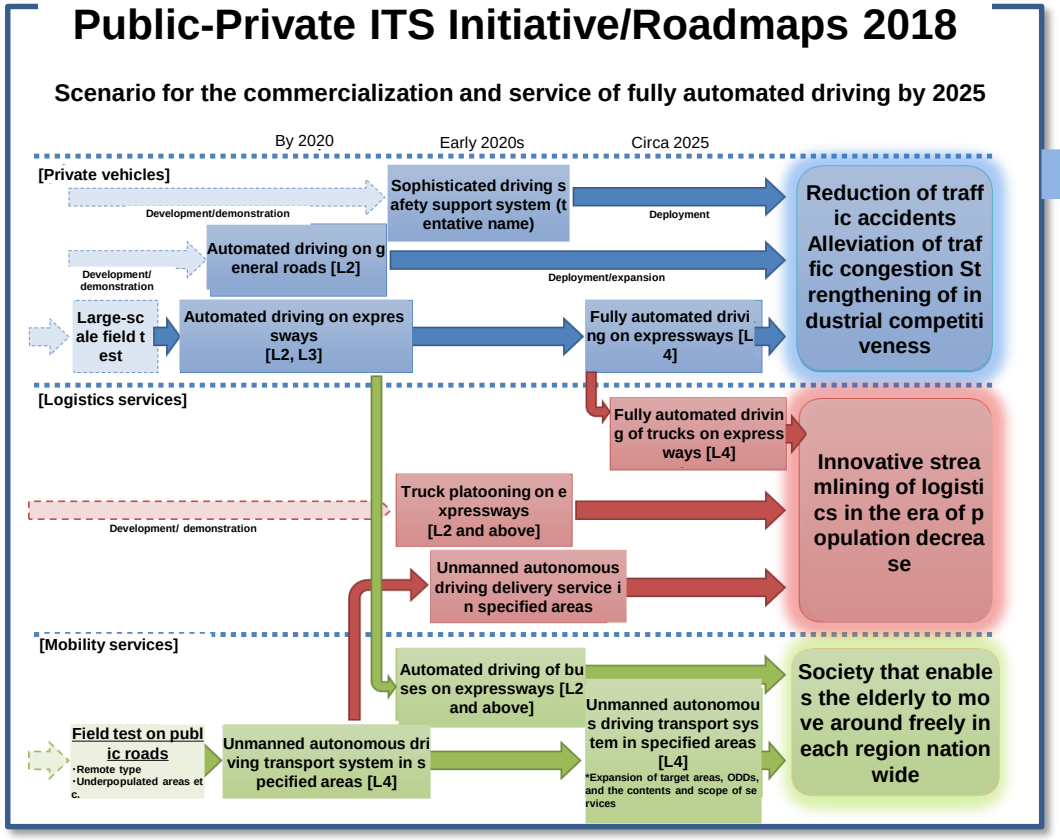
Overview of 2nd Phase of SIP-adus

The operational domain of automated driving will be **extended from highways to arterial and general public roads**, and automated driving systems will be **implemented in mobility services including public transport and logistic operations.**
⇒ Safe and comfortable mobility for everyone in society.



*SAE (Society of Automotive Engineers): Standardization body in the U.S.

Objectives



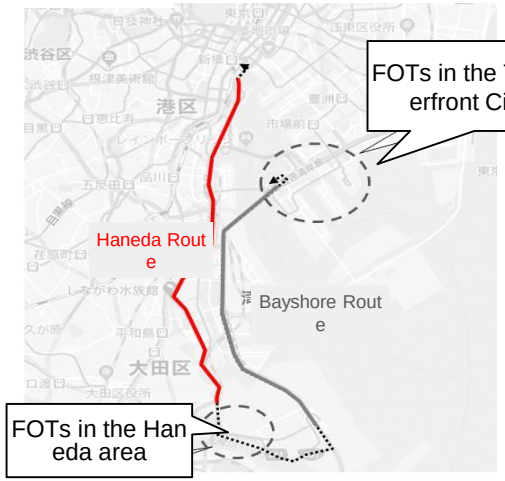
- To establish the **cooperative areas** technologies essential for implementation by 2023
- To create **multiple example cases for commercialization through FOTs by** involving various **businesses and local government**

Deployment Milestones

Investment and business planning by private operators will be promoted by:

1) **taking full advantage of the Olympic and Paralympic Games Tokyo 2020**
2) **conducting FOTs based on the business plans of entrepreneurs and local government**

■Course



FOTs with **matching fund**

Open discussion for promoting interna tional standardization and R&D

Local FOTs involve **entrepreneurs and local government**.

Main domain of SIP-adus' R&D

Vehicle

＜Recognition＞

Map,
ITS info.,
Sensor

＜Judgement＞

AI

＜Operation＞

Actuator

HMI

＜ Cooperation w/Human＞

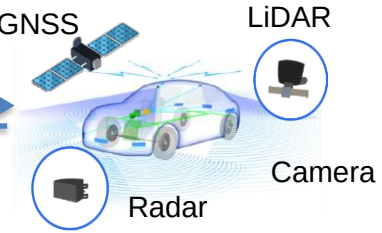
Human
Machine
Interface

Traffic Environmental Data

3D HD Map
+
Dynamic Traff
ic information

Dynamic map

Connected



Social acceptance

Impact Assess
ment

Basic technology

Cybersecurity

Simulation

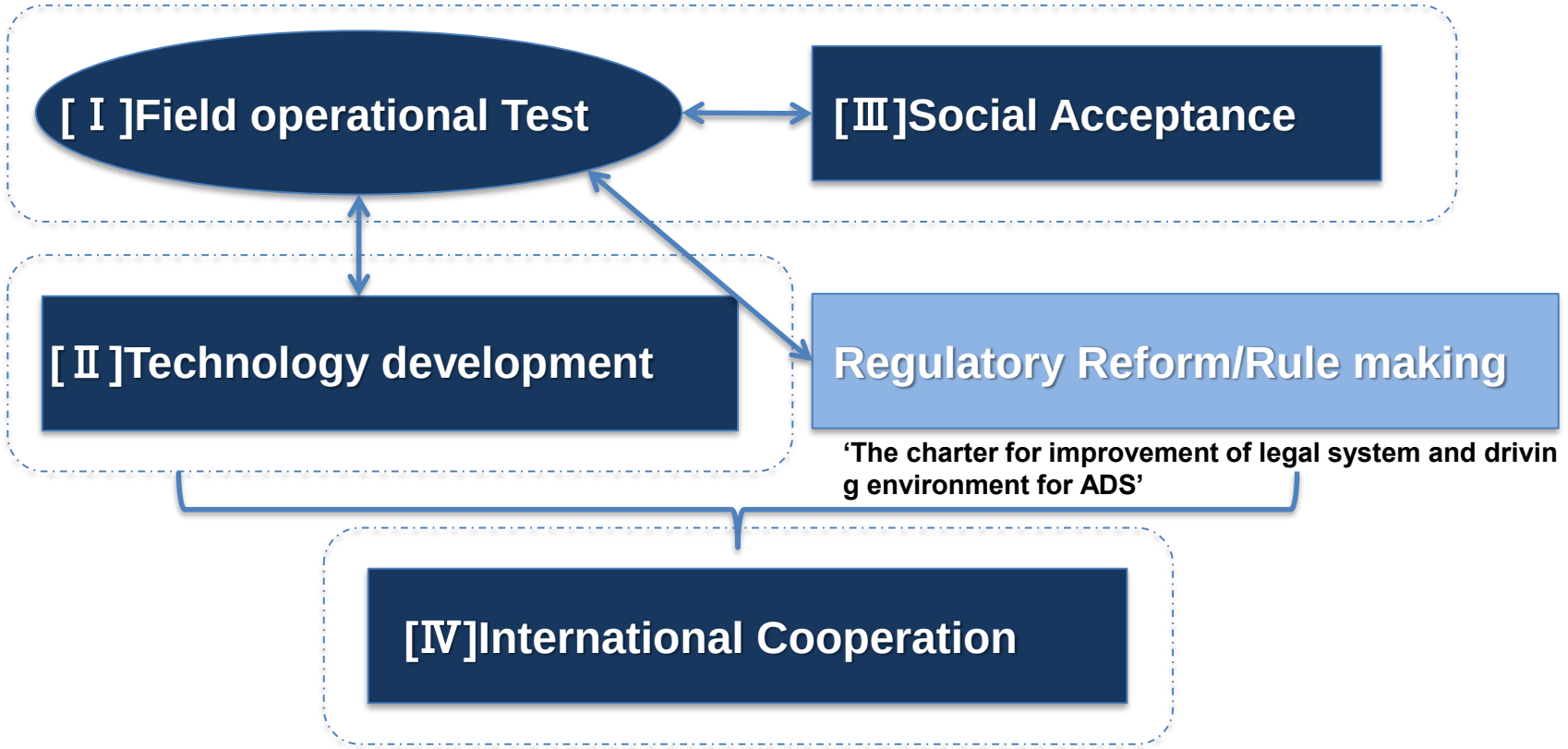
Database

Over the air

Safety assurance

In red：
Main Domain of SIP-adus
（Area of Cooperation）

4 Pillars of 2nd SIP-adus

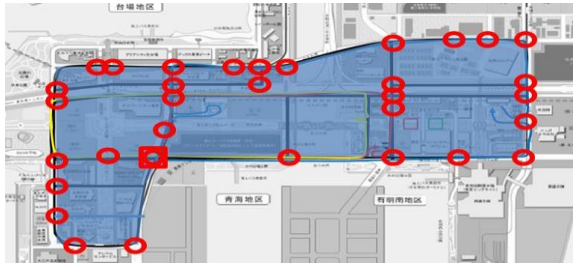


FOTs (Tokyo Waterfront City–Haneda Area)

■ **FOTs will start in autumn 2019 in the Tokyo waterfront city area** (general roads and Metropolitan Expressway / Haneda area) **with recruiting participants widely**

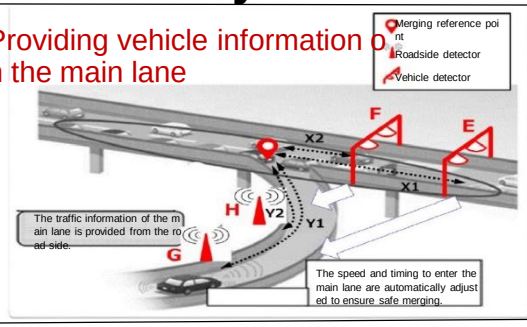
Providing traffic signal information

Providing the signal display and change timing information even in environments where recognition is difficult using in-vehicle cameras.



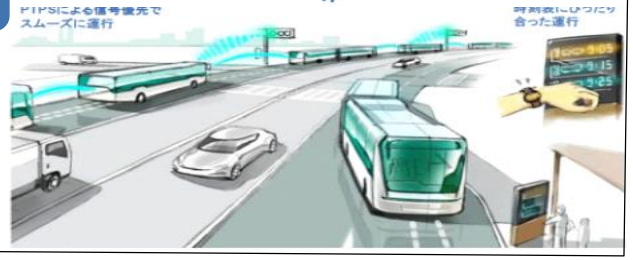
Merging assistance on the main lane of highways

Providing vehicle information on the main lane

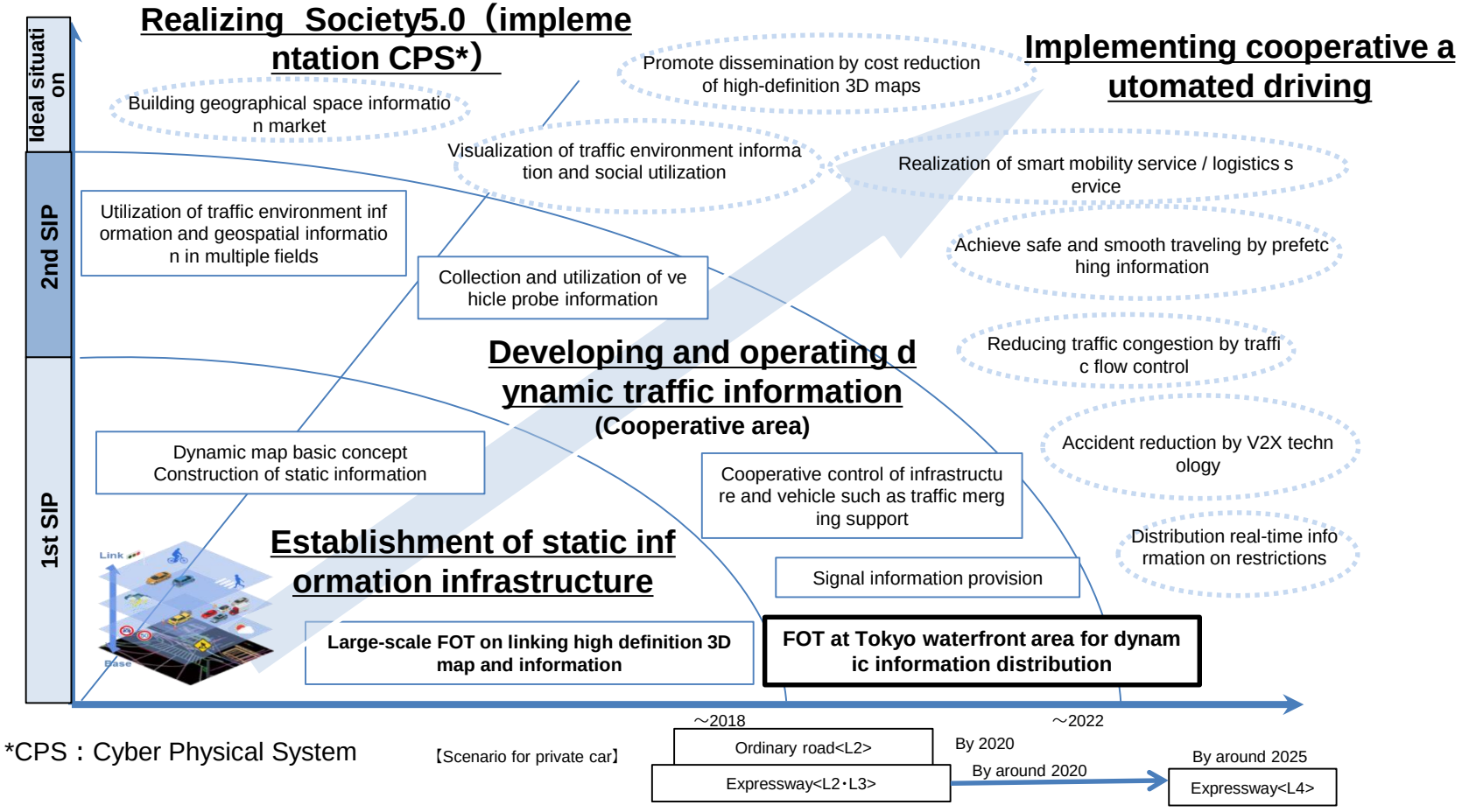


Public transport system (self-driving buses)

FOTs for the next-generation ART by using automated driving technology in mixed traffic flow.



Building the Traffic Environmental Info. Framework

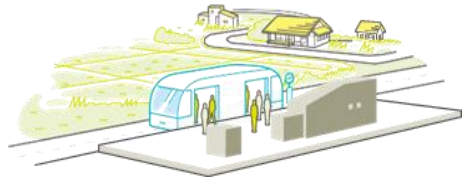


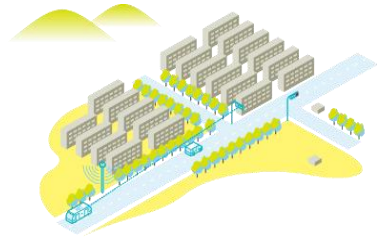
*CPS：Cyber Physical System

FOTs (Local Transportation)

■ **Long-term FOTs** will be implemented in underpopulated areas, local communities, etc. thr ough collaboration **with entrepreneurs and local government** to validate business feasib ility of automated driving in terms of logistics and mobility services.

Mobility/logistics services in underpopulated areas, etc.





FOTs for technologies → FOTs for implementation and commercialization

Long-term FOTs on public roads toward commercialization as means of local logistics and mobility services for citizens

Ensuring means of mobility in areas where many elderly persons live or that are not easily accessible

International cooperation

SIP-adus Workshop 2019

November 12-14 @ Tokyo International Exchange Center

Regular annual international conference for Info. Sharing & discussion

【Themes at Breakout WS】
Dynamic map, Connected, Human Factors Cybersecurity, , Safety Assurance, FOT

FOT in Tokyo Bay area

Start from Oct. 2019

Recruit participants widely including overseas
⇒Discuss about standardization openly with various entities like OEMs, suppliers, academia.
More than 25 participants are expected to join.

(1st SIP FOT participants)

Collaborative research with research institutes overseas is under discussion


Thank you

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CAVs in Australia

Contents

1. Key policies and actions for deploy ment in Australia
2. Areas where international co-opera tion are beneficial
3. How can international co-operation activities be improved

About the NTC

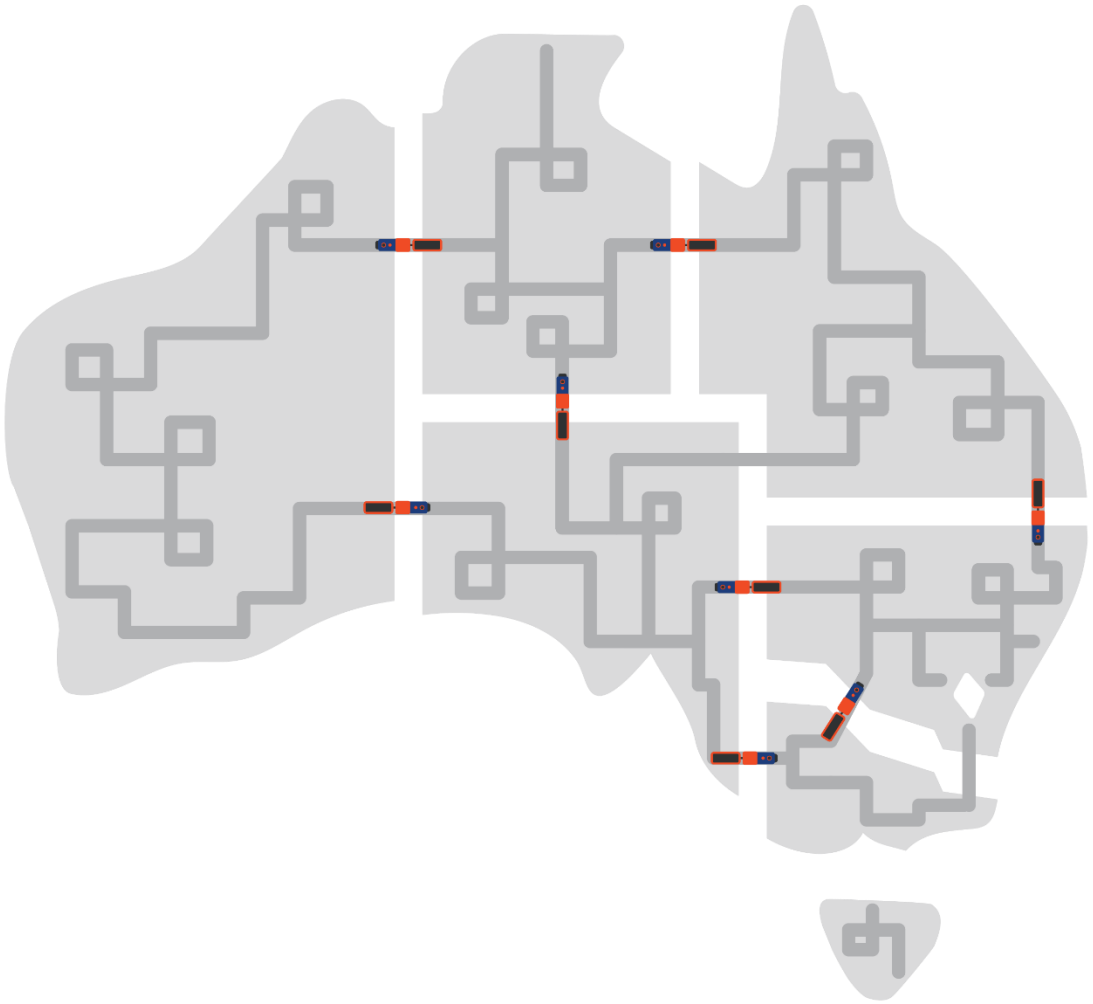
- Independent body
- National transport policy reform proposals
- Funded by the Commonwealth, state and territory governments
- Remove regulatory barriers to new, innovative transport services and products

Regulatory context for vehicles
Australia

- **Federal** system
- Eight states and territories and Commonweal th
- **First supply** (type approval) Commonwealth
- **In-service** (including regulation of (human) d rivers, vehicle registration, licensing, civil liabil ity, criminal liability-states and territories

Goal

- End-to-end regulation to sup port the safe, commercial de ployment and operation of a utomated vehicles at all leve ls of automation
-



About the automated vehicle program

Who is responsible for driving and what are the responsibilities of various parties?	**Changing driving laws to support automated vehicles**
How do we ensure automated vehicles are safe at first supply and once on roads?	**Safety assurance system**
How do we protect users' data?	**Review of government access to connected and automated vehicle data**
How do we ensure people in an accident with an automated vehicle are not in a worse position than people in an accident with a conventional vehicle?	**Motor accident injury insurance review**

Consultation

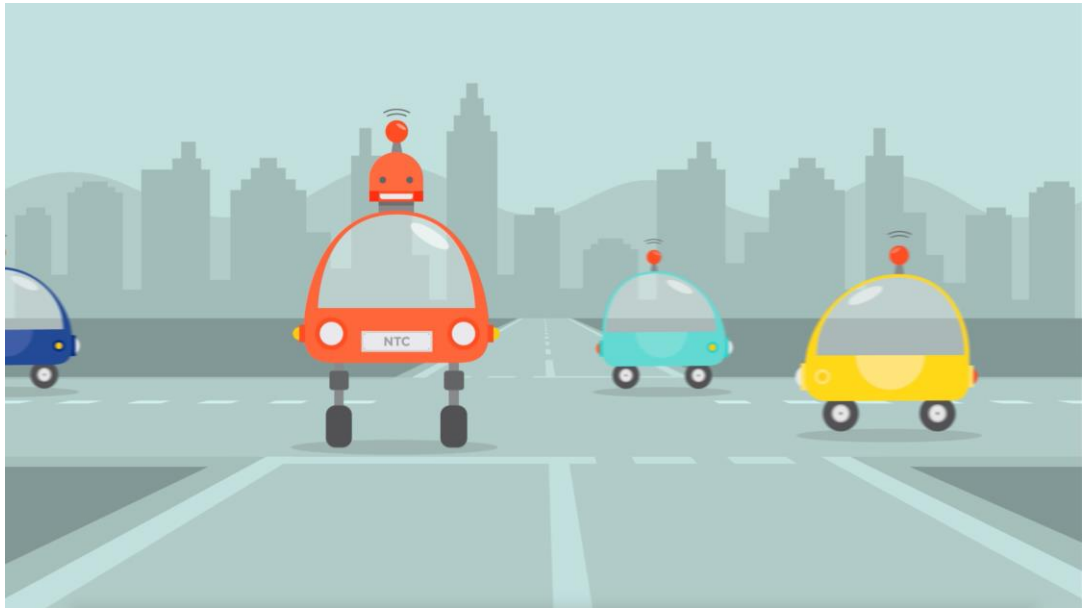
Key themes

- **National approach** to laws regulating an ADS ‘driver’ and safety assurance.
- **International alignment**
- **Legal certainty** and clarity about:
  - whether an ADS is legally permitted to perform the dynamic driving task.
  - which entity is legally responsible for an ADS when it is performing the dyna mic driving task, including responsibility for complying with road traffic laws.
- **No safety gaps** if an ADS performs the dynamic driving task.
- **Equity of insurance coverage** people injured in an accident with an automated ve hicle need to be no worse off

Automated Driving System Entity (ADSE)

Key concept for our work:

The ADSE is the entity that is cer tifying that the ADS can safely pe rform the driving task.



Challenge

Vehicles and drivers

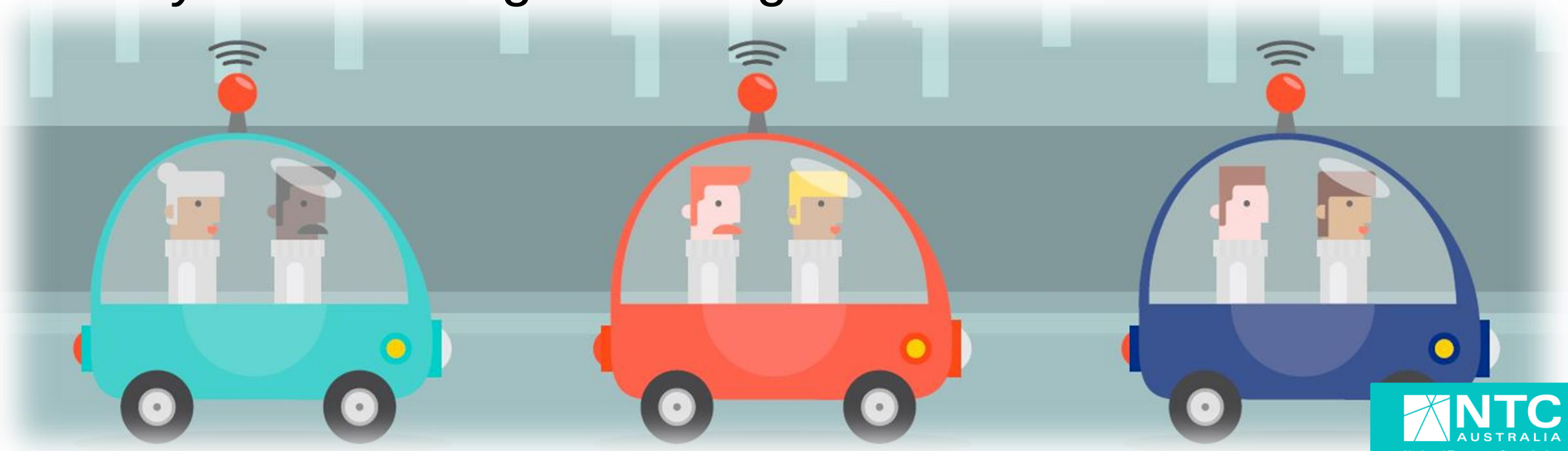
Purpose-built national law

Uniform approach to driving laws

1. Allows an ADS to perform the dynamic driving task
2. Ensures that there is always a legal entity responsible
3. Clarifies responsibility when the ADS is engaged.
4. Sets out any obligations on relevant entities.
5. Provides a regulatory framework with flexible compliance and enforcement o ptions.

ADSE driving responsibility

When engaged, the ADS is in control at conditional, high and full automation and the ADSE is responsible for compliance with dynamic driving task obligations.



NTC AUSTRALIA
National Transport Commission

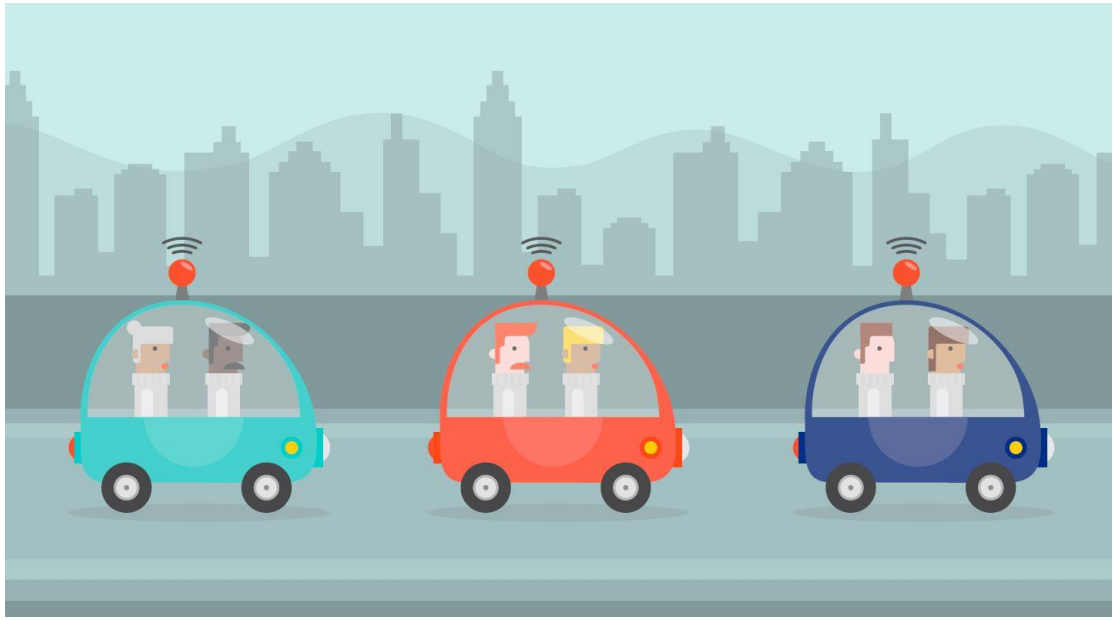
Fallback-ready user

Recommended duties for fallback-read y users:

a) remain sufficiently vigilant to res pond without undue delay when required

b) hold the appropriate licence

c) comply with drug, alcohol and fa tigue driver obligations



First supply of vehicles with an ADS

November 2018, transport ministers decided:

- Mandatory self-certification at first supply based on 11 safety criteria and 3 additional obligations
- Incorporated into existing framework for first supply (Road Vehicle Standards Act)
- Transition to pre-market approval as international standards are developed.

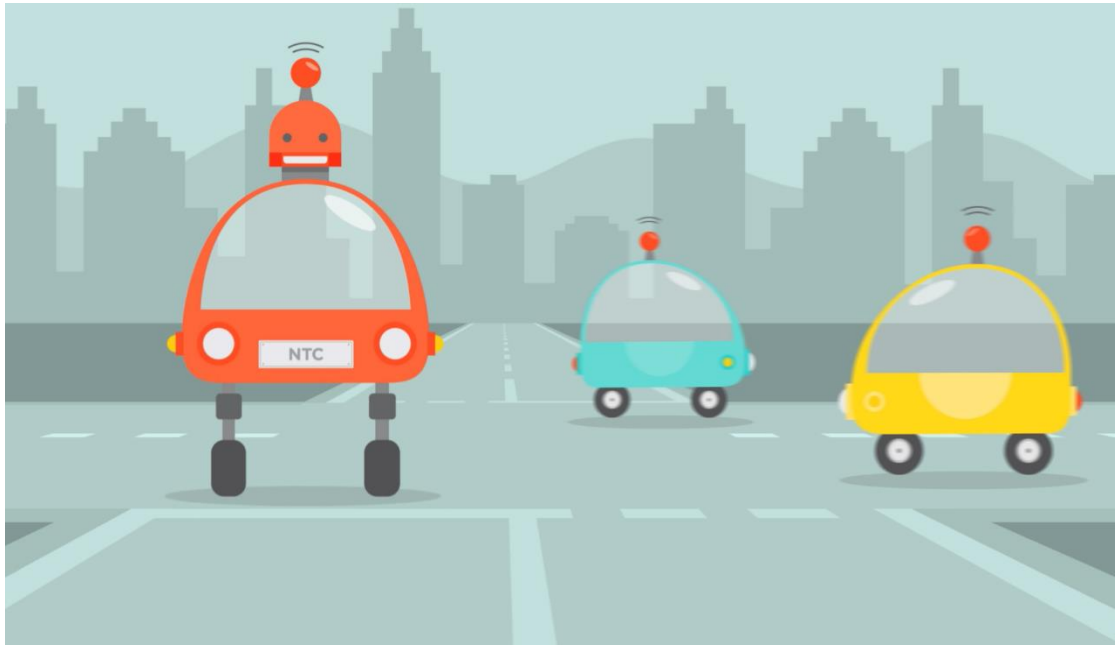
Safety assurance for automated vehicles

Safety assessment criteria

1. Safe system design and validation processes
2. Operational design domain
3. Human-machine interface
4. Compliance with relevant road traffic laws
5. Interaction with enforcement and other emergency services
6. Minimal risk condition
7. On-road behavioural competency
8. Installation of system upgrades
9. Verifying for the Australian road environment
10. Cybersecurity
11. Education and training

Additional obligations

1. Data recording and sharing
2. Corporate presence in Australia
3. Minimum financial requirements



In-service safety – What is the problem?

- In our current regulatory environment, when vehicles with automated driving systems become ready for deployment:
- they may introduce new in-service safety risks that the market will not eliminate or mitigate
- nationally inconsistent approaches to in-service safety and multiple re gulators without clearly defined roles could be a regulatory barrier to market entry.

In-service safety – Key issues

1. Parties – which parties influence on-road safety? ADS entities, OEMs, owners, modifiers, repairers, …
2. Duties – what duties should these parties have? Should there be a ge neral safety duty or more prescriptive requirements?
3. Institutional arrangements – who is the regulator for in-service safety of ADSs? Does it need to be national regulator?

In-service risks

Considering types of safety duties

- Non-prescriptive, overarching and positive general safety duty on the ADSE to ensure the safety of the ADS ‘as far as reasonably practicable’.
- Safety duties on others such as modifiers, repairers, registered owners?
- Similar to WHS or HVNL duties. It is likely that the WHS safety duty would apply in many cases so this would not be create an additional burden
- Allows ADSEs to integrate compliance systems with existing WHS systems

How do we protect users' data while ensuring the benefits of government access are realised?

- What is different about C-ITS and automated vehicle data?
- How would current privacy and information access laws ap ply?
- Is there a need for reform to manage government access?

Motor accident injury insurance (MAII)

- What happens when an AV crashes and injures someone?
- Are they covered by existing compulsory third party insurance?

Areas where international co-operation are benefi cial?

- Testing-share information, avoid unnecessary duplication
- Vehicle standards-development of standards through WP 29-maximum involvement of countries in this
- Regulatory approaches-share information-approaches to regulation and adopt successful approaches where possible

How can international co-operation activities be i mproved?

- Streamline number of forums, avoid duplication
- Aim for as much consistency of organisational representation as possible
- Focus on industry/ government international forums