A Concept of SIP-adus for the Next Generation Transport

The 2020 Tokyo Olympic/Paralympic Games

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Scope

1. **Reduction of traffic accident, congestion and CO2 emission** by optimizing Public transit sharing ratio.

2. **Accessibility** support for person who required accessible services and infrastructures should be considered **as a prior factor**.

3. By utilizing **Automated Driving Technologies** and Traffic Information Control Systems such as PTPS and PICS, the Urban Transportation will be changed to the Next Generation Systems.

4. With **Rapid, On-time and Safety** features, Demand responsive minimum waiting time operation will be realized.

Four important layers for the development

Integrated Rapid Transit : Not only physically fast in travel speed, the whole time from the origin to destination should be minimized including connection, boarding, fare collection, etc.

Fundamental philosophy of Universal access for all at every physical and information spaces

Comprehensive traffic policy

(A) Total design of the whole transportation systems in the targeted district

Public transit systems

(B) Performance design as a public transportation system

Control system requirements and specifications

(C) Effective operation and service system design utilizing automated driving technologies

Vehicle structure
Control system/devices
Communication systems

(D) Fundamental system design supporting for above 3 layers; Vehicle structure, Control system/devices, Comm. systems

Targeted Populations and Integrated Solutions

Accessibility assistance

Integrated Solutions

- ITS, Wireless and Sensors
- Connected Vehicles
- Automated Driving
- Advanced Rapid Transit
- Robotics and AI
- Accessible Data
- Infrastructure update
- Public manner and Education

Targeted Populations

Ambulant people with disabilities

The elderly

Pregnant women/ Infant/ Children

Foreigner/ Foreign tourist

Types of disabilities

Visual impairments

Mobility impairments

Hearing Impairments

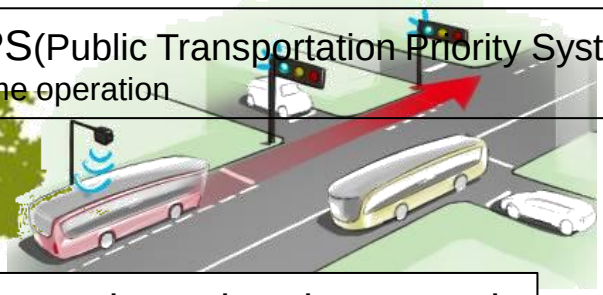
Intellectual /Cognitive impairments

Infant/ Children with risk

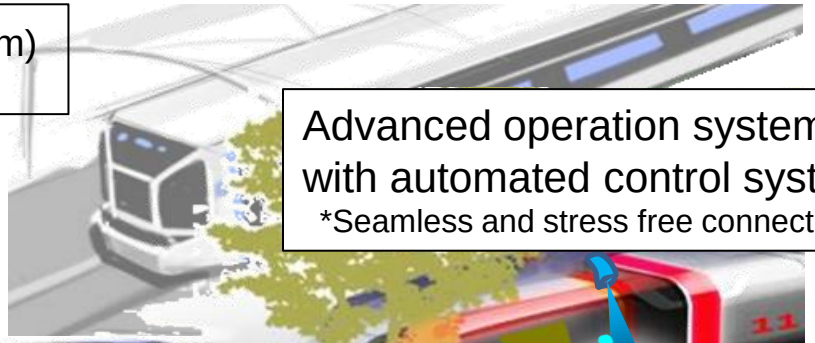
Advanced Rapid Transit

(Purpose) 1.To contribute the next evolution of Tokyo and Japan as a whole
2.Utilizing ITS, Automated driving Technologies and ITC,
(1)Create the world standard accessibility
(2)Develop the integrated rapid transit

Advanced PTPS(Public Transportation Priority System)
*Rapid and On-time operation

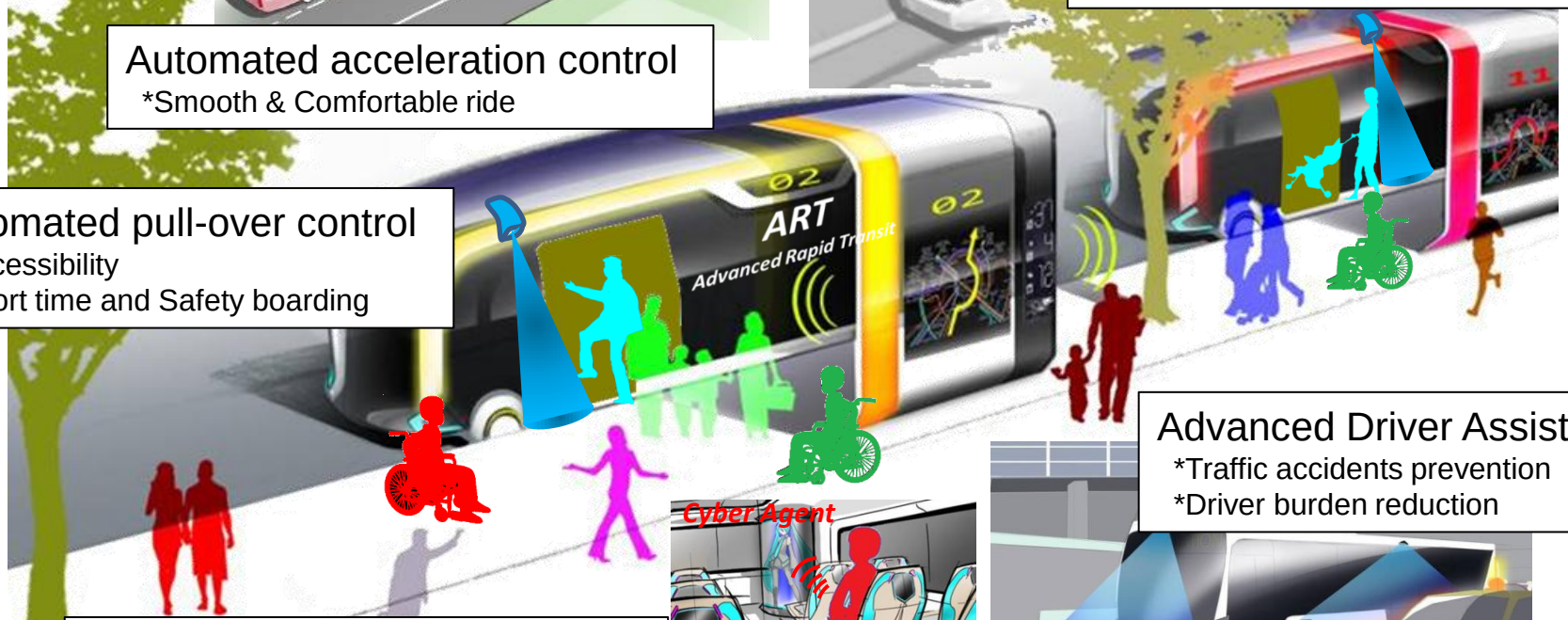


Advanced operation system
with automated control systems
*Seamless and stress free connection

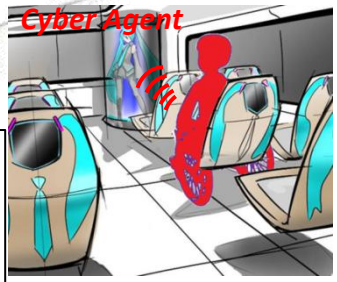


Automated acceleration control
*Smooth & Comfortable ride

Automated pull-over control
*Accessibility
*Short time and Safety boarding



Advanced Driver Assistance
*Traffic accidents prevention
*Driver burden reduction



Universal built-in seats
Contactless electronic charging
*Cabin Safety and Convenience

Cooperative ACC
*Traffic congestion/CO2 reduction

Next Generation Urban Transportation Systems: Advanced Rapid Transit
Technological requirements for the system

Environment

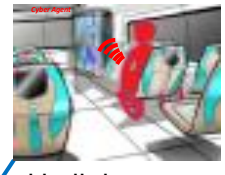
Safety

Traffic congestion & CO2 reduction

Vehicle safety
Cabin Safety

Stable & High density operation

Advanced Driver Assistance



Universal built-in seats

High speed safety on the motor way

Cooperative Adaptive Cruise Control

Level 3 Automated Driving System

Advanced seatbelt for person with wheel chair

Traffic safety at merge/divergence points

Optimum inter-vehicle distance control

Optimum Accel/Decel Control

Collision Avoidance Control

Optimum Traffic signal control

Optimum Operation Management

Traffic density Management

Traffic flow smoothing control

Automated Driving Technologies

Advanced PTPS

Public Transportation Priority System

Seamless connection from other transit

Low speed guidance system in a facility

Contactless e-charging

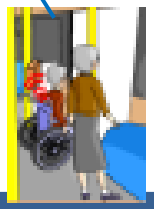
Automated pull-over to the platform

Zero Emission drive in buildings

FCV
PHV
EV

Flat & Seamless boarding

Smart fare collection



On-time connection & Accessibility

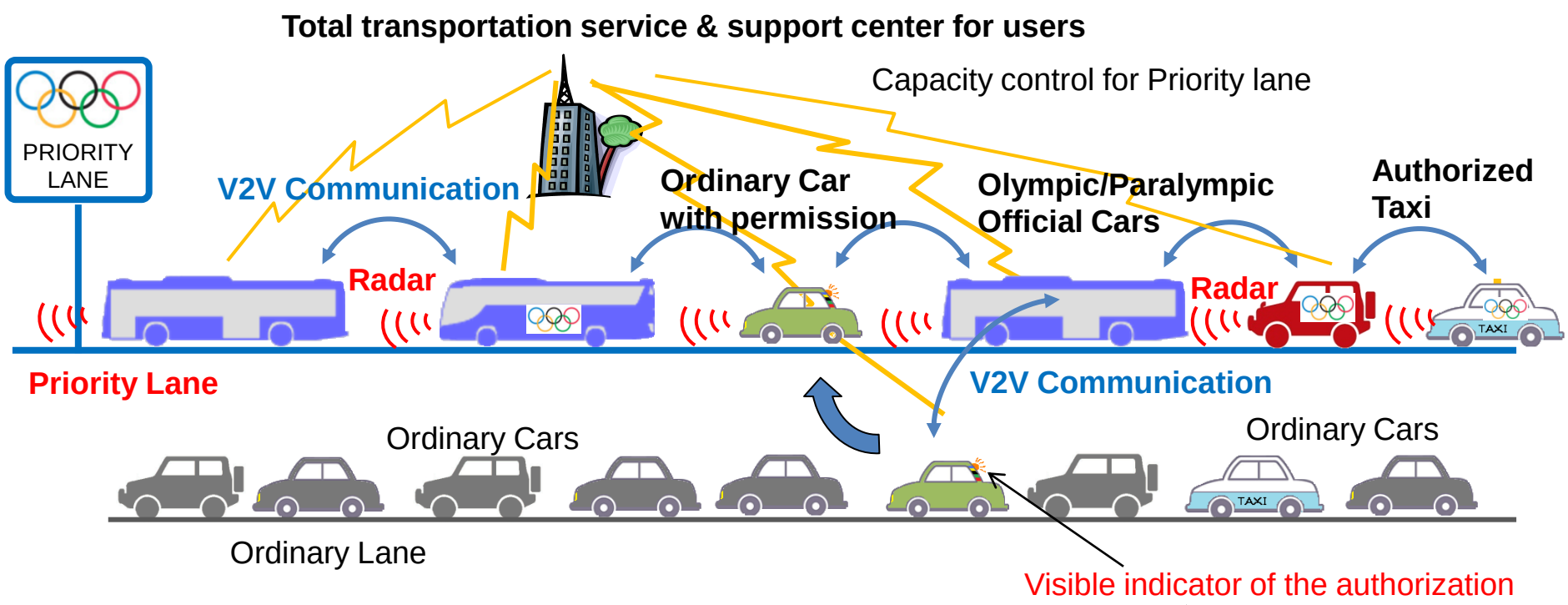
Smooth & Safety boarding
Fast and Smooth travel

Rapid and On-time operation

Priority lane traffic control with Flexible platooning

Secure traffic flow stabilization on the priority lane
for Safety, Efficiency of the road utilization and Rapid transit

Concept of mixed platooning with the official cars and authorized ordinary cars



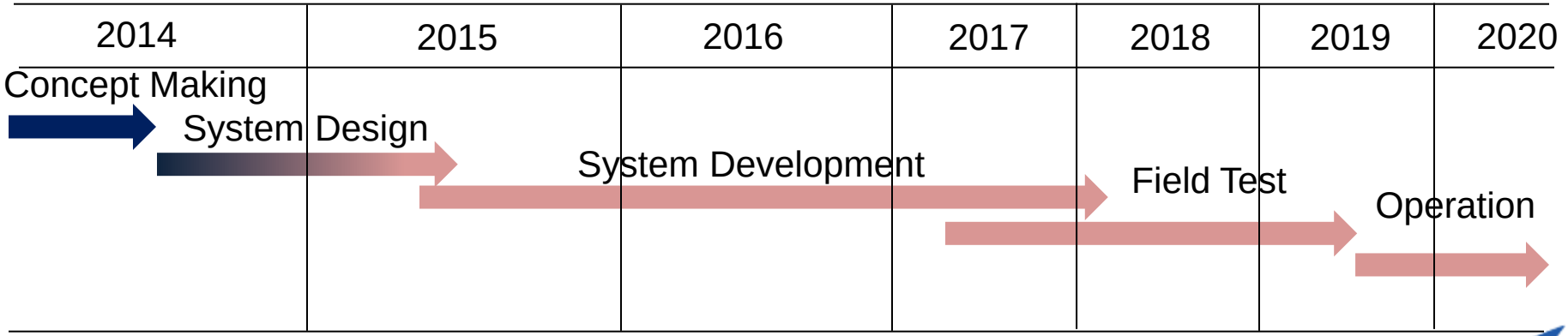
A idea of “Dynamic authorization” from the control center for ordinary cars to join the organized platooning on the priority lane with C-ACC and communication functions

Summary

1. The basic concept for Next Generation Urban Transportation Systems was made in the Cross-ministerial Strategic Innovation Promotion Program (SIP) in Japan.

2. Key components of the Advanced Rapid Transit (ART) concept are Automated Driving Technologies for **Traffic safety**, **Cabin safety** and **Traffic congestion/CO2 reduction** as well as **Rapid, Comfortable and On-time** operation of Public Transit.

3. **The 2020 Tokyo Olympic/Paralympic Games** is considered as the first important milestone of launching it into the megacity.



Thank you for your attention

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