

January 9, 2017

Accessible transportation and Mobility
- Technology Subcommittee -

SIP-adus Japan, Next Generation Transport - *ART Information Center* -

**SIP-adus Next Generation Transport WG Co-Chair,
University of Tsukuba**

Masayuki KAWAMOTO



Promoting Dynamic Engagement of All Citizens

Advanced Public Transit promotes Social participation of Elderly and Handicappers



Consistent Accessibility

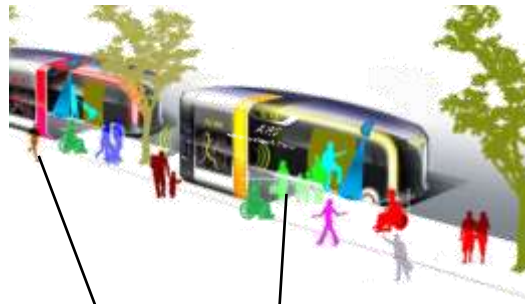
Not only physical accessibility but also informational accessibility

Improve accessibility to ART
(Remove barrier/ Time saving for getting on/off)

**Pedestrian Accessibility
& Safety Support System**

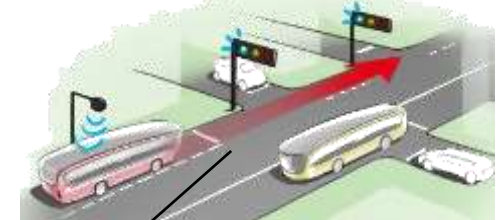


Advanced Pedestrian Information
Communication System



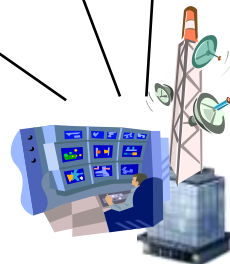
Precise Docking,
Smooth Acceleration/Deceleration

Stress free Public Transport
(Secure Rapidness and On-time)



Advanced Public Transport Priority
System

ART Information Center



Open Information Platform for ART related applications

Application Examples

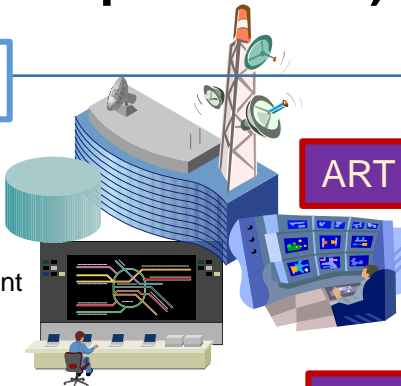
- * Congestion Prediction
- * Dynamic Connection Guidance
- * Remote Diagnostics

SIP-adus Activity for Next Generation Transport ART(Advanced Rapid Transit) Project

ART Information Systems



Centralized Cyber Agent



ART Information Center

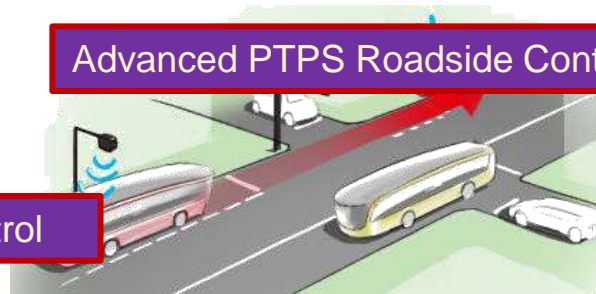
Bus location/operation system collaboration

Crowdedness Prediction

Advanced PTPS Roadside Control



Advanced PICS Control



Pedestrian Accessibility & Safety Support System

ART Rapidness Support with PTPS

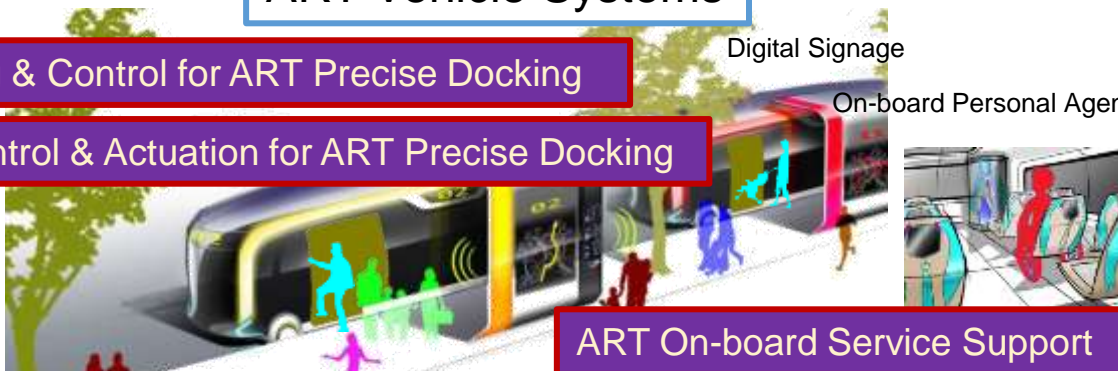
ART Vehicle Systems

Sensing & Control for ART Precise Docking

Control & Actuation for ART Precise Docking

Digital Signage

On-board Personal Agent



ART On-board Service Support

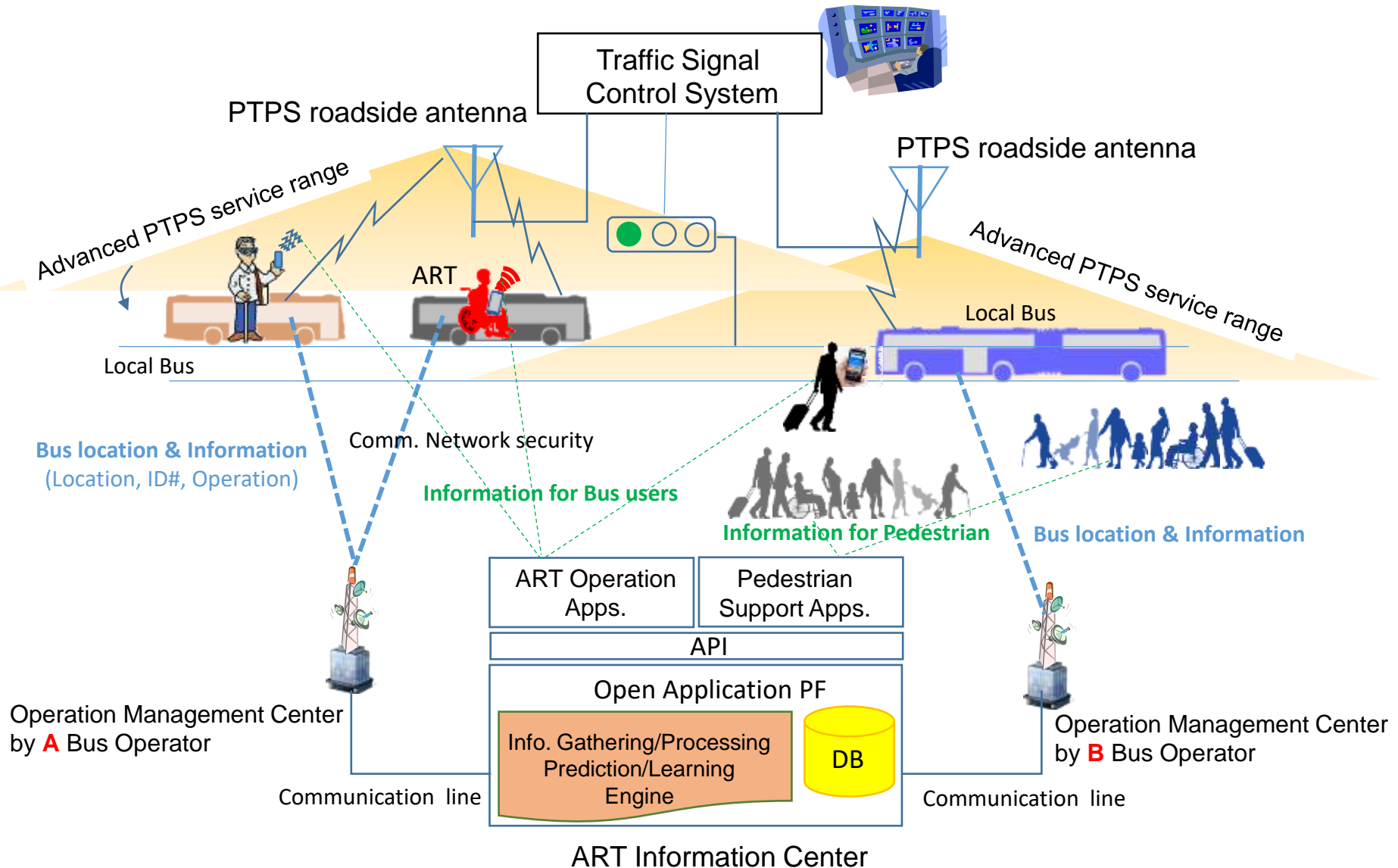
Advanced PTPS Vehicle-side Control

ART Information Center

Core of Information in ART Operation



ART Information Center System Concept



Bus Priority Management for advanced PTPS

Expand feature of UHF Radio wave PTPS

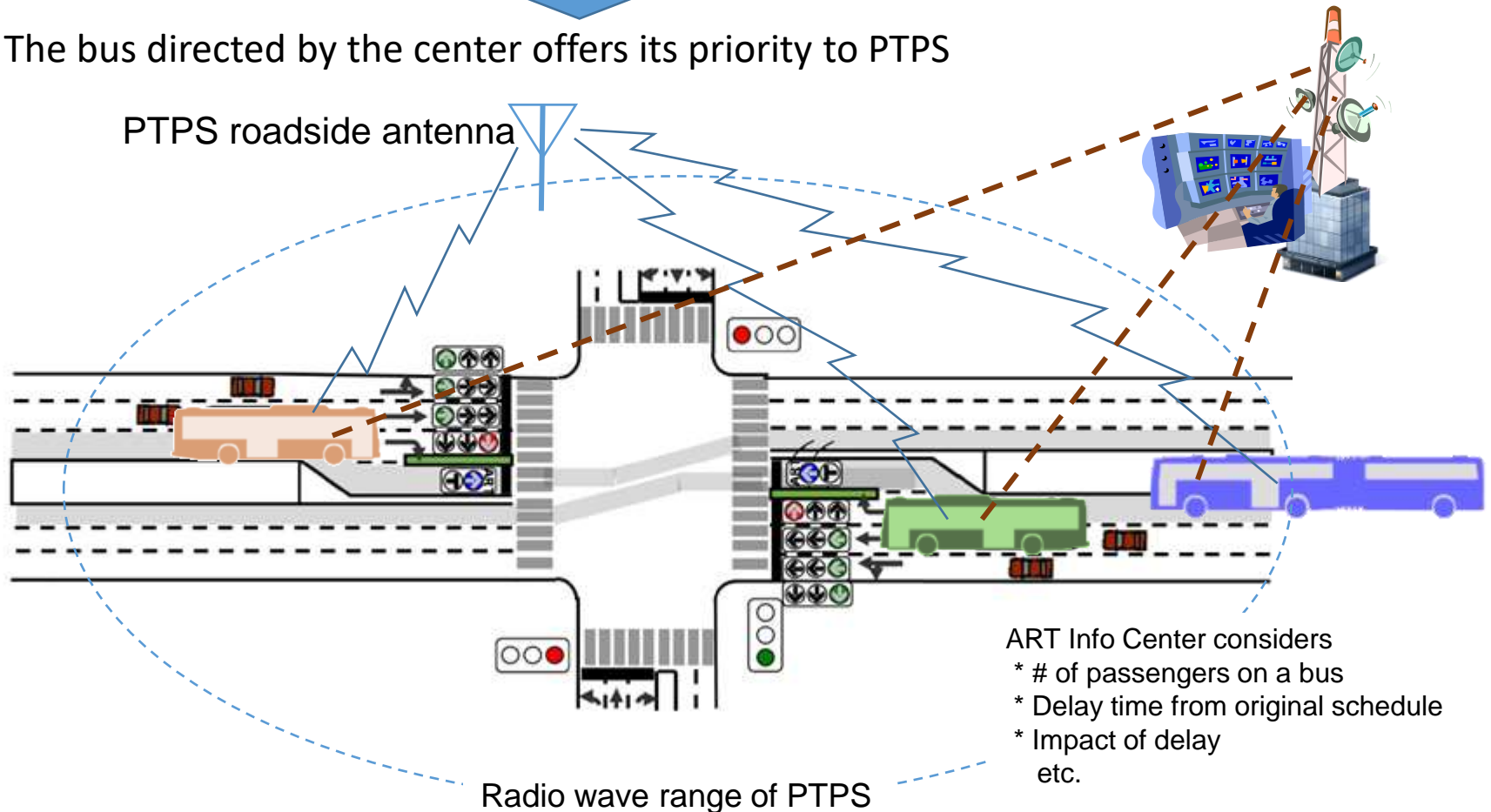
All buses within a certain distance from the intersection have a right to offer their priority to go into the intersection



In order to organize priority, ART Information Center labels buses which one should have a priority.



The bus directed by the center offers its priority to PTPS



Smart & Dynamic Connection

Dynamic Connection Guidance

Arrival time estimation
 based on Past operation data (deep learning)
 & current congestion

Onboard Arrival Station & Connection Guidance for foreign traveler and visually impaired person

Send information to your smartphone,
 then it speaks with your language and vibration



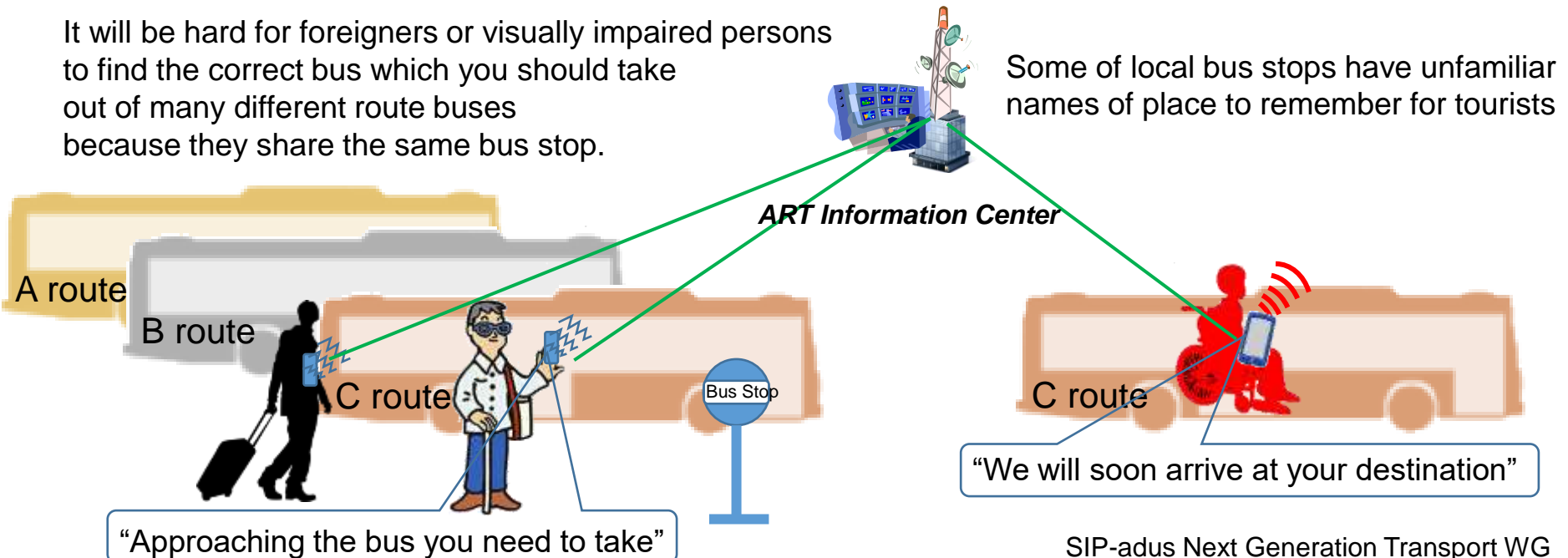
Personal Bus Use Guidance for Foreign tourist and Visually impaired person

You need to put your departure/destination places into the travel planner application before your journey. Then the system will...

- 1) Notify when your bus is approaching in front of you.
(to avoid taking a different bus at the same bus stop)
- 2) After on-board, Notify when your bus is approaching to your destination
(to avoid riding past your bus stop)
- 3) Above notification will send to your smartphone, then translate to your native language by local apps. in your smartphone.

It will be hard for foreigners or visually impaired persons to find the correct bus which you should take out of many different route buses because they share the same bus stop.

Some of local bus stops have unfamiliar names of place to remember for tourists

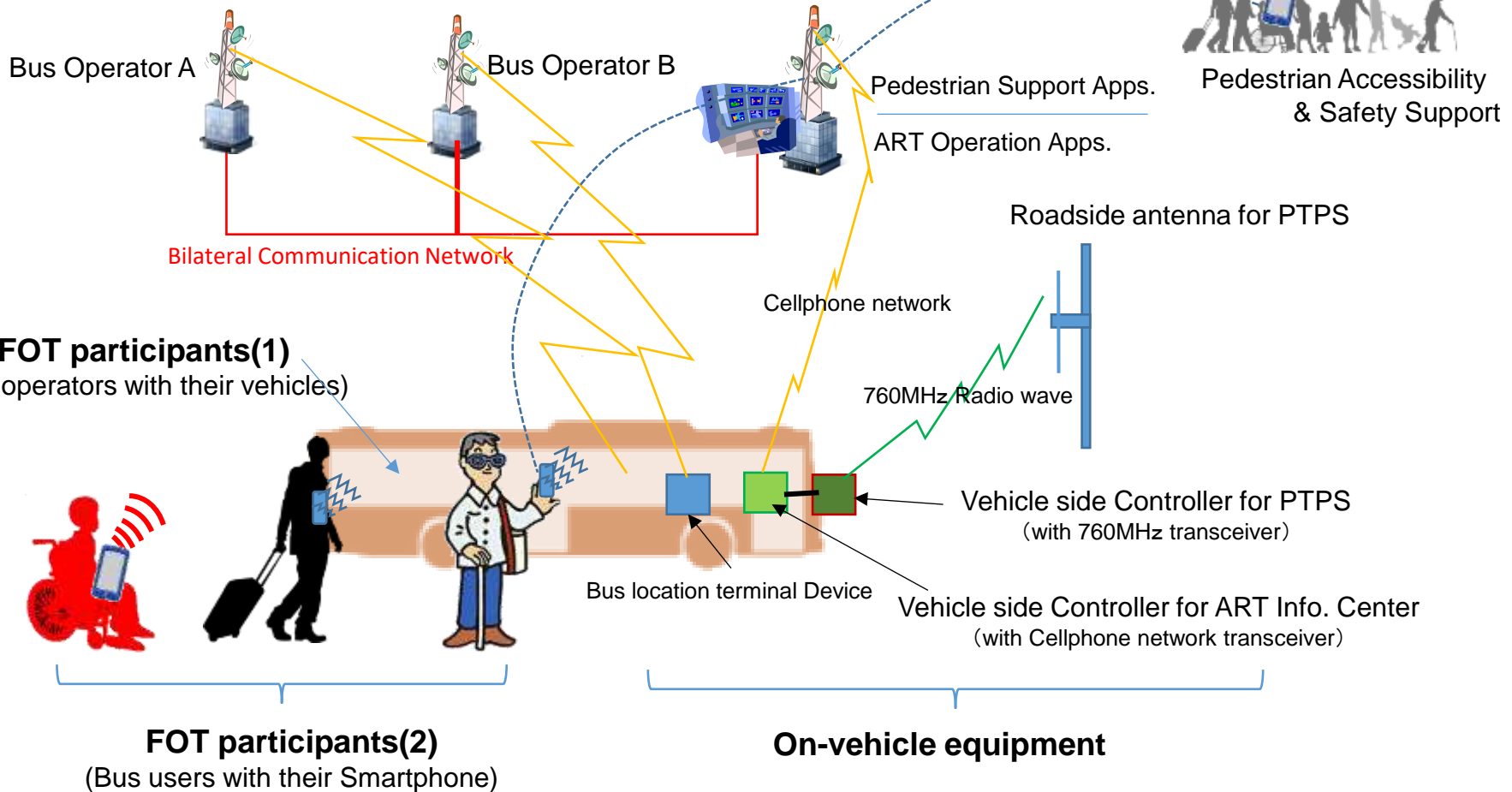


Field of Test

Operation Management Center
(Bus Operation Company)

Bus location, Operation Info.
Road congestion/ PTPS priority info.

ART Information center



Summery

1. SIP-adus Next Generation Transport WG is focusing on introducing accessible transport environments especially for elderly and handicapped persons.
2. ART(Advanced Rapid Transit) and ART Information Center is our first approach to the accessible mobility society.
3. In the SIP-adus FOT which will take place in 2017FY-2018FY, our concept will be also demonstrated.

Thank you for your attention

Accessibility for all people



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