



Project Overview

Implementing the ART (Advanced Rapid Transit) system to meet the challenges caused by Tokyo's further growth and aging population

Social Landscape / Social

Currently, one in four people can be broadly recognized as having limited accessibility, considering such factors as mobility disadvantages and risk of traffic accidents.

Long-term Vision

Implementing ART with a view to extending it to other cities in Japan as well as exporting it as a package to other countries. The Tokyo Games is a milestone in this process.

During the Tokyo Games

Creating a stress-free transportation network during the Games. Toward that goal, transportation routes shall be established between central Tokyo and the hitherto less serviced waterfront area where many of the events will be held, and a transportation infrastructure that is accessible to everyone, including those using wheelchairs or baby buggies.

Three Priorities

1 Social Impact

Promoting a new urban model equipped with an ideal transportation system that meets global challenges such as an aging society

2 Hospitality during the Games

Creating a highly accessible environment for everyone to ensure easy mobility in and around the Olympic and Paralympic venues

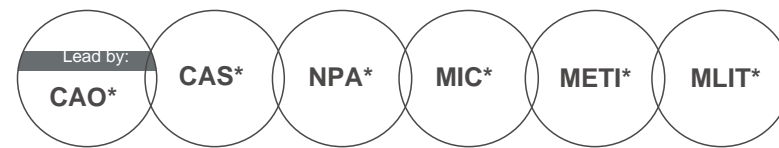
3 Shared Value

Exploring new business opportunities, including extending the infrastructure to other cities and exporting it as a packaged urban plan

Concept for 2020

Mobility Innovation 2020 Next Generation Urban Transportation System

Accessible, convenient transportation for everyone



*CAO: Cabinet Office
*CAS: Cabinet Secretariat
*NPA: National Police Agency

*MIC: Ministry of Internal Affairs and Communications
*METI: Ministry of Economy, Trade and Industry
*MLIT: Ministry of Land, Infrastructure, Transport and Tourism

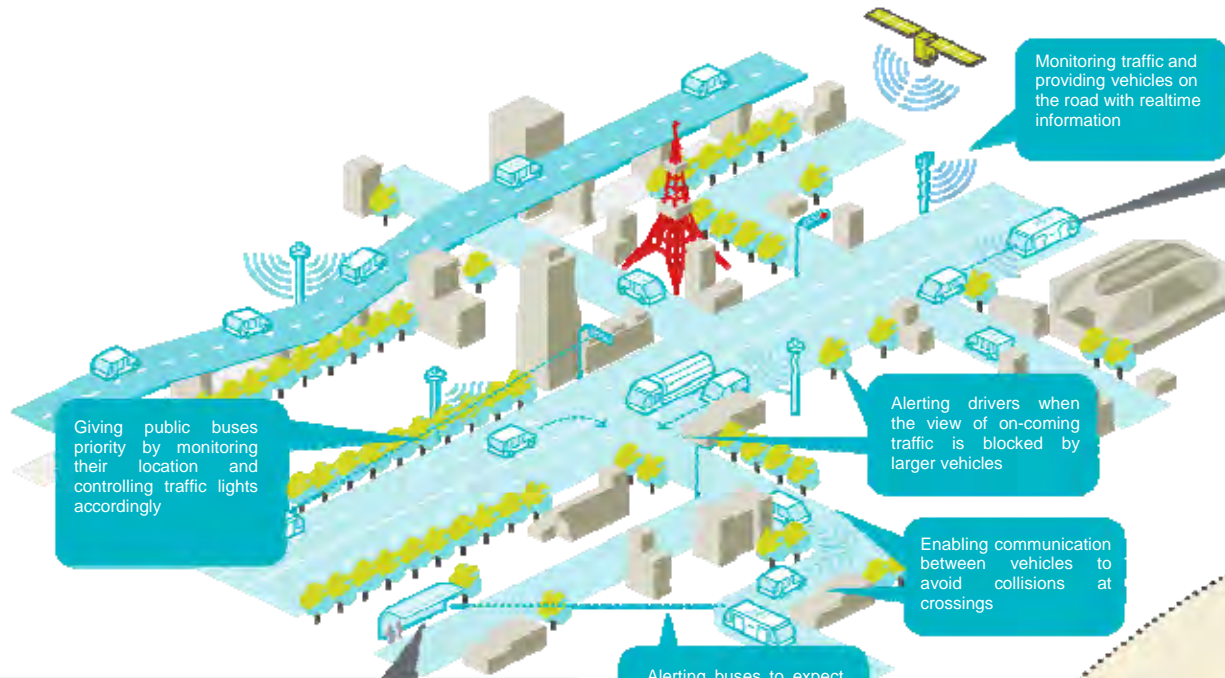


Objective and Conceptualization

Developing the ART (Advanced Rapid Transit) urban transportation system aimed at providing convenient, user-friendly transportation for everyone

Scenario 1 In Town

Creating a safe and smooth-running urban infrastructure where public transportation is given priority



On an ART bus

Smooth and quiet. A very comfortable ride!

Giving public buses priority by monitoring their location and controlling traffic lights accordingly

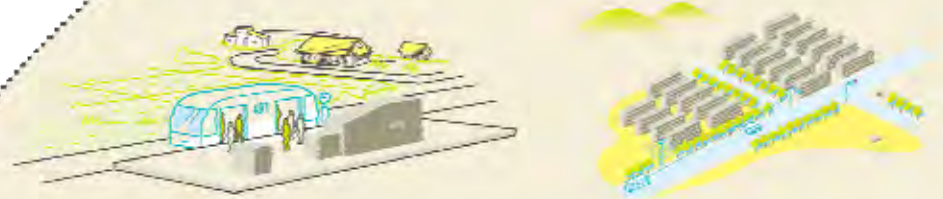
ART bus stop

Right on time, as usual!

No problem getting on the bus with a wheelchair!

Scenario 2 In Suburban Towns

Serving communities with aging populations or insufficient public transportation



Eg.1 Converting out-of-service rail routes into bus routes for the ART system

Eg.2 Incorporating the ART system when redeveloping towns



Course of Action Toward 2020

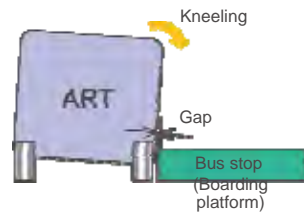
Developing precise docking control technology to park buses accurately at bus stops. Establishing Public Transportation Priority System (PTPS) that prioritizes public vehicles to ensure smooth and steady traffic.

R&D① Precise Docking Control Technology (automatic alignment and height adjustment)

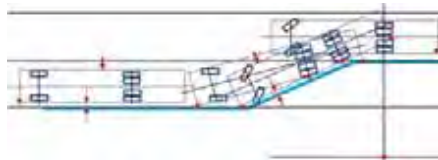
Item 1 Maximum permissible gap, from the viewpoint of accessibility (width, height)



Item 2 Vehicle requirements (Horizontal adjustments such as "kneeling")



Item 3 Docking control to minimize gap

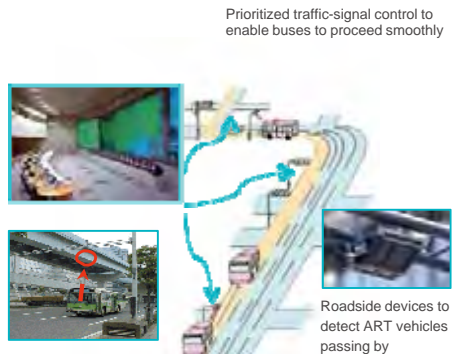


Optimizing the curves of bus-stop boarding platforms

Developing the technology and system for precise docking control to minimize the gap between buses and boarding platforms, to make it fully accessible for people with wheelchairs and baby buggies.

R&D③ Enhanced PTPS (Public Transportation Priority System)

Developing a new PTPS to ensure public safety during the Games, enabling a sustainable operation of the ART system, and extending the ART system to other areas. Using the 700MHz band for wireless communication as part of the PTPS.



R&D② Optimal Acceleration Control

One of the main causes of passengers falling over onboard buses is the sudden change in speed as the vehicle starts moving or comes to a stop. This also means bus drivers are constantly under pressure to be cautious and mindful of their passengers. To ensure passenger safety and reduce drivers' psychological burden, it is necessary to look into a smooth acceleration control technology with the level of precision suitable even for Shinkansen bullet trains.

R&D④ System Integration

Developing various components of the ART system. This includes systems on bus service control, passenger service information, automatic fare-collection to ensure on-time operation, and implementation of ART elemental technologies in vehicles (such as fuel-cell buses).

- Smooth acceleration control technology with a level of precision suitable even for Shinkansen bullet trains while preventing passengers from falling over
 - Automated driving control
- Seamless transit with minimal waiting time
 - Organically integrated operation system
- Improved punctuality
 - Advanced PTPS
 - Automated driving control
- Quicker and safer boarding/Disembarking
 - Auto-maneuvering technology
- Preventing accidents, reducing drivers' stress
 - Automated driving technology
 - Advanced driving assistance
- Quicker boarding/disembarking, prevention of passenger injuries
 - Wheelchair securing device
 - Automated contactless fare collection
- Traffic optimization, reducing traffic jams and CO₂
 - C-ACC (Cooperative Adaptive Cruise Control)



Initiatives and Partners

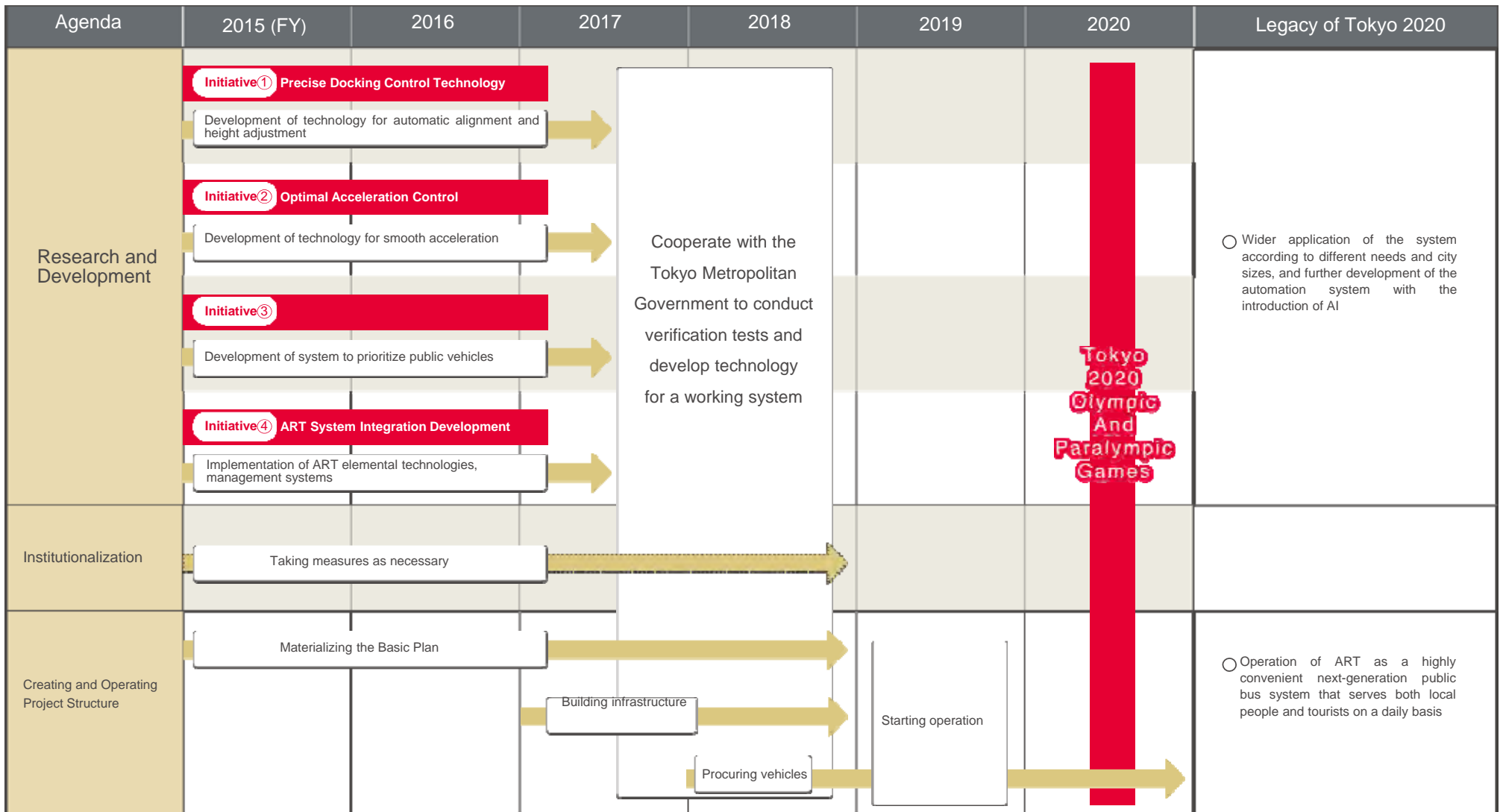
Initiatives	Cooperating Organizations	Details
Research and Development		
Precise Docking Control Technology (Automatic alignment and height adjustment, smooth acceleration) Optimal Acceleration Control Enhanced PTPS (Public Transportation Priority System)	SIP-adus* (CAO*, NPA*, MIC*, METI*, MLIT*, etc.)	In order to establish ART (Advanced Rapid Transit) as the next generation urban transport system, it is necessary to improve accessibility using technologies such as smooth acceleration control, and precise docking control to accurately align the buses at bus stops to enable easy access for wheelchair or elderly passengers. R&D efforts are also underway to control traffic lights to give priority to public transportation and ensure reliable, timely operation.
ART System Integration Development	SIP-adus (CAO, NPA, MIC, METI, MLIT, etc.) Project operators, etc.	
Verification Tests		
Public road test	SIP-adus (CAO, NPA, MIC, METI, MLIT, etc.) Relevant offices of the Tokyo Metropolitan Government, Project operators, etc	Possible staging of verification test of the SIP-adus from FY 2017, to identify problems and provide feedback to R&D as part of efforts towards social application of the system. Improve social awareness and consider extending the system to cities other than Tokyo.
Creating and Operating Project Structure		
Planning Developing infrastructure and procuring vehicles for BRT (Bus Rapid Transit system)	Public Transportation Council of the Waterfront area (Bureau of Urban Development, Tokyo Metropolitan Government) Relevant offices of the Tokyo Metropolitan Government, Project operators, etc.	<ul style="list-style-type: none"> ▪ The Tokyo Metropolitan Government is aiming to implement the BRT system by the end of 2019. The Basic Plan was drawn up in April 2015, after thorough review by the newly formed Waterfront BRT council ▪ Keisei Bus Co. was chosen as the operator following public selection procedures based on the Basic Plan ▪ The Waterfront BRT Project Plan was laid out in April 2016 • Development of infrastructure, vehicles, and systems will be conducted with the cooperation of the operator, partners, and relevant local governments
Enhancing Project Promotional Framework		
Signing of MOU regarding cooperation for the Waterfront BRT project	CAO, Bureau of Urban Development, Tokyo Metropolitan Government Project operator, Bus manufacturers	<ul style="list-style-type: none"> • Signing of the Memorandum of Understanding in April 2016, by the CAO, the Tokyo Metropolitan Government, and relevant parties • Promoting cooperation in areas including technological development and verification tests to develop the ART system

* SIP-adus : Cross-ministerial Strategic Innovation Promotion Program
 – Innovation of Automated Driving for Universal Services
 * CAO : Cabinet Office
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Timeline



Tokyo 2020 Olympic And Paralympic Games