

### Improvement of Quick Transportability and Time Reliability of Advanced Rapid Transit (ART)



#### Introduction

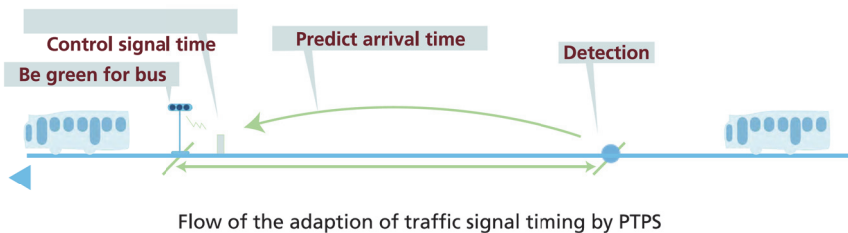
##### To make the bus more convenient

It is important for users to ensure the speed and the time reliability of bus services. Public Transport Priority System (PTPS) has been introduced in Japan to avoid delay caused by a signalized intersection. The possibility of improvement of efficiency of PTPS is being studied as part of the development of ART.

#### What is PTPS and advanced PTPS?

##### PTPS

PTPS is a system to give the traffic priority to buses. It has a control system of traffic signal timing based on the predicted arrival time by detection of buses approaching to the signalized intersection, so that the buses can pass the intersection smoothly.



##### Advanced PTPS

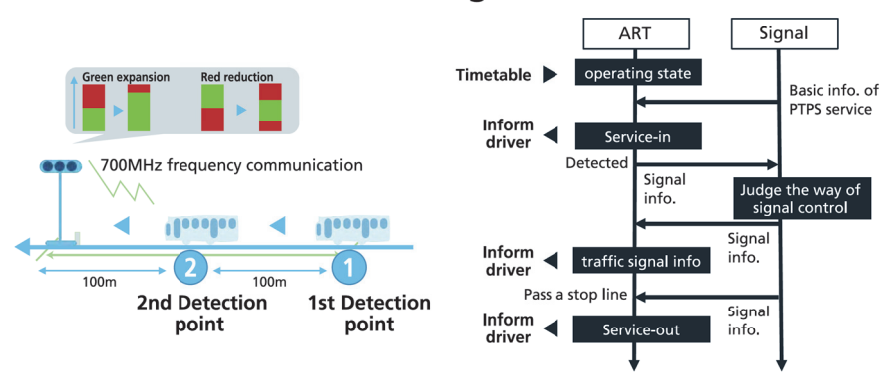
Advanced PTPS can keep communication with running buses and send message to bus drivers using 700MHz band vehicle-to-infrastructure communication. It can control signal time more flexibly according to the traffic situation. Furthermore, it can communicate multiple buses in all directions by one roadside unit.

	Current Japanese PTPS	Advanced PTPS
Type of communication	Optical beacon	700MHz Frequency
Frequency of bus arrival detection	Only once	Multiple times
Information provision to a bus driver	Nothing	State of priority

#### 1. System Configuration

##### Detecting twice and communicating with driver

Advanced PTPS detects approaching ART twice before ART arrives at an intersection and decides to extend green time, to shorten red time or to keep same signal time. Then, the system sends the information of the traffic signal to the ART driver.



#### 2. Real Machine Verification

##### Experiment for the future

A real machine verification of Advanced PTPS under an experimental environment in a test course was conducted.



#### 3. Evaluation of the Effect by Sim.

##### Cleared shortening of travel time

The effect of Advanced PTPS was studied by a traffic simulation model. As a result, Advanced PTPS could shorten travel time and improve time reliability of ART. Furthermore, Bus Lane may be necessary to obtain the expected effect of Advanced PTPS.

