

Summary of SIP-adus Project (FY2017)

Name of the Project	Development of the next-generation public transportation systems
Responsible Organization	UTMS Society of Japan
Name	Shunichi Kawabe (UTMS Society of Japan)
Objective and Background of the Project	
<p>Realization of the smart transportation system for public buses is required to cope with traffic demands during the 2020 Tokyo Olympic and Paralympics Games and after the urban development which follows the Olympic games. On the other hand, public transport has been discontinued one after another in local areas due to the population decrease, but the importance of public transport increases as a means of transportation for the elderly in Japan which has become a super-ageing society. Therefore we will develop the next-generation public transport systems which has both convenience and economic rationality.</p>	
Project summary	
<p>(1) Status until the last fiscal year A function for upgrading PTPS (Public Transportation Priority Systems) currently in operation was designed and a model system used for verification was installed at intersections in Tokyo.</p> <ul style="list-style-type: none">• Compared to the previous systems in which the bus priority request is transmitted from an infrared beacon installed at the upstream of the intersection, the model system was designed to enhance the effectiveness of the priority control, by enabling the transmission of the bus priority request not only when the bus approaches the intersection but also when it approaches the upstream of the intersection by using the 700 MHz wireless communication.	
<p>(2) Description of tasks for Fiscal 2017 In order to validate the content of the design, field verification was conducted using the model system and test vehicles. Vehicle driving speed, the increased green time and truncated red time based on driving timing were verified. Verification was also performed for the case where the test vehicle stops at a bus stop at the upstream of an intersection and passes through the intersection.</p>	
<p>(3) Results Further extension of green time was appropriately performed as designed using the bus priority request which was transmitted when the bus approached the intersection. The result confirmed that the model system was able to reduce the travel time as designed. It was also confirmed that the priority control can be performed in cases where a bus stop is situated at the upstream of an intersection, and findings concerned design methods, such as the bus detection position to enhance the effectiveness of the priority control were successfully obtained.</p>	
Future Plan	
<p>(1) Improvement of efficiency in the effectiveness verification of the bus priority control The verification was performed by collecting log data from on-board devices and central computers, which took time. A systemized approach that allows us to readily determine the success or failure of, and effectiveness of the priority control is desirable.</p> <p>(2) GNSS error For intersections with significant GNSS error, it is desirable to verify whether wasted green time or failure in priority control often occurs or not.</p>	