Summary of SIP-adus Project (FY2016)

Name of the project	Investigation about actuators and control for advanced rapid transit system in investigation and consideration about issues towards autonomous driving system.
Responsible Organization	JTEKT CORPORATION
Name	Sadahiro Kawahara　(Research & Development Headquarters)

Object of the Project

>Development of application technology for Advanced rapid transit which is public transportation (large size bus) applied autonomous driving technology.
>Clarification of cooperation contents for introduction of ART technology to new public bus which is studying towards Tokyo Olympic and Paralympic games in 2020.

 1) Phase advance control for steering system
 2) Realization of shared steering control between driver and autonomous driving system
 3) Realization of riding comfort by integrated control for steer and brake

Project Summary

1) Evaluation of basic vehicle dynamics characteristics
Frequency response characteristics like phase delay or transition value was investigated related from steering input to road wheel output or vehicle movement.
Phase advance control algorism which is possible to compensate the delay characteristics is effective to improve precise docking ability.

2) Investigation of steering shared control using Driving Simulator
Prototype control system for human interface for precise docking control was proposed and evaluated using driving simulator and test mule.
Concept of shared driving is effective for precise docking control.

3) Investigation issues to improve riding comfort at precise docking control
Riding comfort on small bus was evaluated.
Evaluation result is different between the existing position, standing or sitting.

4) Basic studies for steer and brake actuator and integrated control unit

Future plan

> Improvement of sensing technologies (precise detection of vehicle position or relative angle, compensation of camera movement)

> Improvement of target routing (routing for precise docking)

> Function of precise docking system should be selected or limited in the case of system control condition

> System design considering user friendly characteristics

> Improvement of override control logic considering autonomous steering control, vehicle speed and lateral deviation