

Summary of SIP-ADUS project (FY2015)

Name of the project	Development and FOT of Traffic Signal Prediction Systems
Responsible Organization	UTMS Society of Japan

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Object of the Project

About 30 percent of Japan's fatal traffic accidents occur at and near signalized intersections. It is also a widely known fact that there is a positive relation between traffic congestion and traffic accidents, and it is therefore expected that smoother traffic flow around signalized intersections would reduce traffic accidents. Technology has recently been developed which sends traffic signal information of routes to vehicles from a traffic control center using advanced infrared beacons that are currently being installed on the roadside.

The project aims to reduce traffic accidents and traffic congestion which are major current problems in road traffic and contribute to the improvement of the environmental performance through the reduction in fuel consumption, by developing technologies for the signal passing support, signal stopping support, etc. using traffic signal information of routes provided from the roadside infrastructure (advanced infrared beacons) and by demonstrating the practicality of these technologies.

Project Summary

By using traffic signal information of routes (information of the distance to up to 16 intersections in a traveling direction, information of the time until the traffic light changes to green, etc.) provided from newly developed roadside infrastructure (advanced infrared beacons), practical application of the driving support system that has the following functions is expected:

- Prediction of colors of a traffic light at the time when vehicles reach the traffic light, based on the route's traffic signal information and the vehicle's travel data received using an on-board system.
- Provision of appropriate information to drivers using HMI (Human Machine Interface) so that drivers can drive comfortably.

In this project, a driving support system which enables the real-time use of traffic signal information will be developed, through the cooperation of the above-mentioned roadside infrastructure and on-board system, and the FOT(Field Operational Test) will be carried out to examine the practicability of the system and drivers' acceptability, together with the effect of the system in terms of the smoother traffic flow and improvement in safety. HMI for improving the system's effectiveness and safety will also be developed.

By using the prototype on-board unit developed in year 2015, verification and analysis of the system's feasibility and acceptability was conducted with vehicles traveling on the roads that have advanced infrared beacons installed. Also, based on the findings of the FOT, matters that need to be taken into account when developing HMI were finalized as a guideline ("HMI guidelines for the system for real-time use of traffic signal information")

Future plan

- Examination of measures for the issues in the practical application identified from the FOT results.
- Dissemination of the HMI guideline.