Joint research concerning next-generation cooperative ITS

(Research period: FY 2017–2019)

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1. Introduction

The cooperative ITS system integrates vehicle-vehicle communication, vehicle-infrastructure communication, and infrastructure-infrastructure communication and coordinates communication methods and the data format to enable the mutual exchange of information among vehicles, roadside equipment, center, and individual terminals and then distribute the information through various applications, such as safe driving support, road and traffic management, distribution management, environment, information collection and distribution, and automated driving.

2. Government-private sector joint research

To realize an effective and feasible cooperative ITS service, it is important that stakeholders, such as automobile manufacturers, electric device manufacturers, and road administrators, examine it together. Therefore, the joint research for technological development to realize the practical application of next-generation cooperative ITS is conducted from FY 2018 to FY 2019 for the government and private sectors to jointly examine the service.

Researchers participating in the joint research were publicly recruited from September to November 2017, and the National Institute for Land and Infrastructure Management and 29 private companies (32 organizations) started the joint research in January 2018.

[Private companies and organizations participating in the joint research]
4 automobile manufacturers (4 organizations)
13 electric device manufacturers (16 organizations)
1 map company (1 organization)
5 relevant incorporated foundations (5 organizations)
6 highway companies (6 organizations)

3. Research categories

Among the many cooperative ITS applications, this joint research set three research categories to realize the government goal of realizing automated driving on highways until 2020. Joint researchers are now examining the relevant topics in the working-group style.

1) Examinations of support services for merging

Researchers are examining a service to support smooth flows of merging traffic by identifying congestion in the main lane and providing information to drivers and vehicles that are about to merge.

2) Examination concerning forecasted information distribution service

Researchers are going to explore services to support vehicles in changing lanes or engaging in other actions by providing road information, such as vehicles in accidents ahead on a road (road forecast information) that vehicles alone cannot detect, to drivers and vehicles.
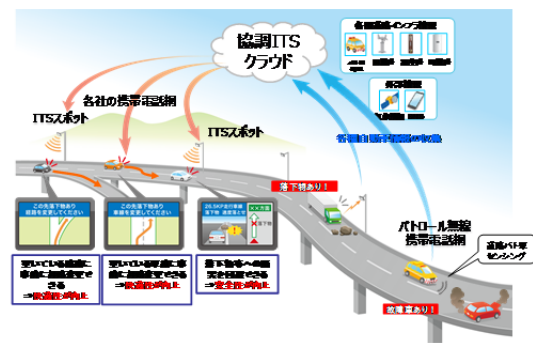

Figure: Example of road forecast information service

3) Examinations concerning the advancement of road management using vehicle information

Researchers are going to explore measures to advance road management, such as the early detection of road abnormalities, including objects on roads and accidents, using information, such as braking behavior and the use of turn signals on individual vehicles, to quickly respond to the abnormalities and provide information to drivers.

4. Conclusion

Researchers are planning to conduct driving tests of the services studied in this joint research using the NILIM test lanes to test technologies for commercial application.