

## Collection System for Probe information from ITS SPOTs

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### 1. Introduction

In the autumn of 2009, private companies began to sell ITS Spot compatible car navigation units, and road traffic information provision and safe driving support information provision services (ITS Spot Services) using ITS Spots started operating. In 2011, ITS Spots were installed nationwide and are now operating at about 1,600 locations, mainly on expressways.

The communication technology used to operate ITS Spot services is characterized by the ability to perform high speed and high volume two-way communications, so that it not only provides road traffic information in one direction from roadsides, a capability of communication technologies already in use for ordinary road traffic information provision services (downlinking), it also permits information to be transmitted from vehicles to the roadside systems (uplinking).

So the Ministry of Land, Infrastructure, Transport and Tourism has, based on specifications prepared by the National Institute for Land and Infrastructure Management, built a system which collects probe information (vehicle position (latitude, longitude, time etc.) and behavior (forward acceleration, lateral acceleration etc.) from ITS Spot compatible car navigation systems through IT Spots (below called “probe system”) and began collecting data in April 2011 (Fig. 1).

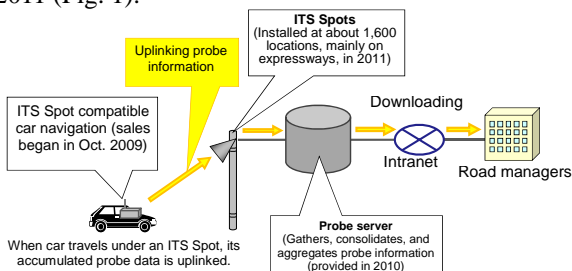


Figure 1. Configuration of the Probe System (Simplified)

### 2. Application to traveling speed surveys

Traveling speed obtained by traveling speed surveys is the most basic index used to represent the road service level. In the past, results of traveling speed surveys, mainly for specified single days (business day, holiday) were reflected in policies, but using probe information to constantly monitor traveling speed permits monitoring of the fluctuation of the service

level on a road (clarifying and assessing singularities or seasonal fluctuation etc.), which could not be learned by past surveys, permitting more advanced and efficient traveling speed surveys.

So a probe server, which is part of a probe system, can aggregate and process the collected probe data to calculate the traveling time for fixed sections of a road, permitting constant monitoring of traveling speed. Road managers can download travel time data through the internet (Fig. 2).

For the selected location, road type, and time period, the travel time by day of week, time period (15 minute units), and by inbound/outbound lane are output in CSV format for each DRM link unit.

Figure 2. Traveling Time Download screen

### 3. Future development

Applications will be developed to analyze probe information and display the results so that the characteristics (precision for example) of probe information collected by probe systems will be clarified at the same time as road managers will be able to monitor changes in road traffic conditions during disasters or to clarify and explain the effects of projects such as the construction of new roads.