Systems using probe information collected from ITS Spots

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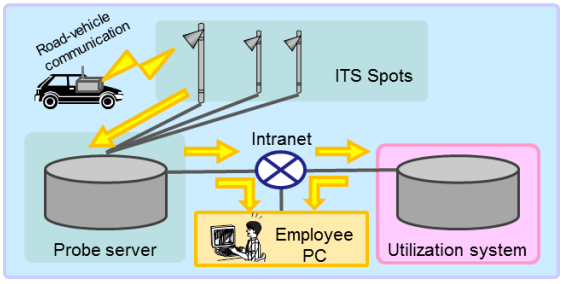
1. Introduction

The Ministry of Land, Infrastructure, Transport and Tourism has developed a system to collect probe information (traveling history, behavior history, etc.) from ITS Spots installed at about 1,600 places, mainly on expressways throughout Japan and began collecting this information in FY2011. The spread of ITS Spot compatible car navigation systems permits the collection of large volumes of probe information at low cost. This means that it is now possible to perform high frequency collection of section unit travel speed or information of use in wide-area road management to perform efficient and advanced road management work. This report introduces systems that use probe information which have been developed for use by road managers (Fig. 1).

Figure 1. Position of a Utilization System



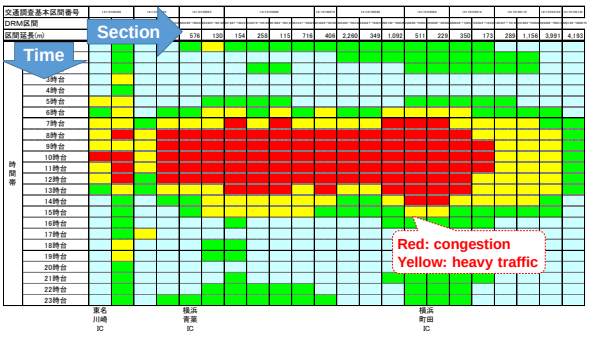
2. Outline of utilization systems

Utilization systems can aggregate and display based on travel speed or behavior histories in DRM link1) units prepared from probe information, and road managers can view and download the results (see Table and Figure 2 and Figure 3).

Table 1. Functions of utilization system

Feature name	Feature outline
Time–space diagram writer	Aggregation of each DRM link section or average speed by hour of selected route, shown on the sheet and illustrated on the map in different colors
Required travel time tabulator	Aggregations of required time to follow the shortest route or selected route by section or time, as shown on the graphs.
Sudden acceleration and braking area mapping tool	Mapping points of the selected areas on a map to indicate locations where sudden acceleration occurred.

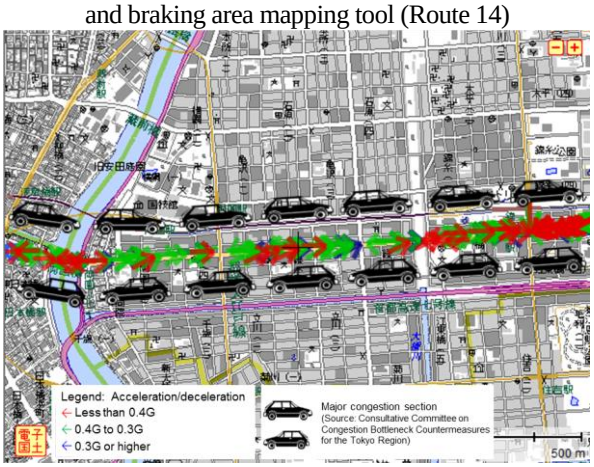
Figure 2. Example of Output Temporal-Spatial Speed Chart (Tomei Expressway)



[Legend]

	Ordinary road	Intra-city expressway	Inter-city expressway
	30km/h or higher	60km/h or higher	80km/h or higher
	20km/h or higher and below 30km/h	40km/h or higher and below 60km/h	60km/h or higher and below 80km/h
	10km/h or higher and below 20km/h	20km/h or higher and below 40km/h	40km/h or higher and below 60km/h
	Below 10km/h	Below 20km/h	Below 40km/h
	No data	No data	No data

Figure 3. Example output from the sudden acceleration and braking area mapping tool (Route 14)



3. Conclusions

In the future, this will contribute to more efficient road management by allowing road managers to aggressively use probe information to take congestion countermeasures, accident countermeasures, and disaster response measures, etc.

[Sources]
1) http://www.drm.jp/

2) Kanazawa, F. et al: Development of Probe data Utilization System to Facilitate Road Management, proc. of 20th ITS World Congress, CD-ROM, 2013