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Nippon Telegraph and Telephone Corporation
Tonami Transportation Co. Ltd.

The Start of an Experiment on an Event-triggered Vehicle Operations Management System Automatically Sending Arrival, Departure, and Passage at Specified Locations Based on Vehicle Operations Plan

- Aiming to provide enhanced, efficient and low-cost vehicle operations management -

Nippon Telegraph and Telephone Corporation (NTT) and Tonami Transportation Co. Ltd. (Tonami) started an experiment in August 2001 using a new type of vehicle operations management system, aiming to provide enhanced, efficient and low-cost vehicle operations management.

NTT Service Integration Laboratories (NTT-SI Labs.) have developed a prototype of an "event-triggered" vehicle operations management system in the field of intelligent transport systems (ITS)[*1] and, in the experiment, Tonami uses the system in the transportation work. The new system is characterized by an automatic detection of an "event" such as an arrival at, a departure from, and a passage at specified locations and automatic transmission of work progress information "triggered" by the event. In the experiment, the capability and the performance will be evaluated, and how to improve the work and transportation efficiency will be analyzed and investigated. Ten trucks are scheduled to be used for 60 days from August until the end of September in the work of special freight transportation and collaborative transportation in Shonan Tonami Transportation Co. Ltd. (Shonan Tonami) which is a member of the All Tonami Group.

<Background>
Recently, in the transportation industry, mainly to improve the efficiency of transportation, vehicle operations management systems are being deployed, which systems send a server location information of fleet vehicles and operational status of drivers using wireless communications. However, most of these systems periodically transmit current locations of fleet vehicles identified by global positioning system[*2] receivers using the DoPa[*3] network, and the vehicle icons are displayed on a map in a monitor of a client computer [See Figure 1]. Therefore, in order to recognize vehicle operations progress, a dispatcher has to relate a vehicle's location to its operations plan, and presumes the operations progress. In addition, it has been pointed out that it is necessary to send the location information within a short interval to recognize precise operations progress, which increases the communication cost. Furthermore, for a dispatcher to recognize the driver's operational status, a driver has to spend time and effort to push buttons to notify his or her operational status, which leads to insufficient accuracy.

<Overview of Technology>
An event-triggered vehicle operations management system consists of an in-vehicle device containing a global positioning system receiver, an i-mode cellular phone, a server that stores information such as vehicle's operations plans and map data, and

client PCs, and it uses NTT DoCoMo's i-mode network and the internet to connect them. After sending the in-vehicle device the information of specified locations according to a vehicle's operations plan, when the vehicle actually arrives at, departs from, or passes the specified locations, the in-vehicle device automatically detects the events and automatically informs the server of the events and the locations [See Figure 2]. A dispatcher accesses the server using a world wide web browser, and instantly recognizes the operations progress of fleet vehicles in a tabular form on the monitor [See Figure 3]. Therefore, the system will lead to 1) providing steady vehicle operations management directly related to the vehicle operations plan, 2) reducing the communication cost, and 3) reducing the time and effort drivers spend for the button operations. Additionally, because i-mode cellular phones are used with the in-vehicle devices, the system can be introduced easily and inexpensively. Moreover, using the historical information of the events and the vehicle locations, how to improve the efficiency of vehicle operations and transportation to make the best use of available information assets will be analyzed and investigated.

<Future Plans>

NTT-SI labs. and Tonami will clarify the merits and demerits of the system and produce a report on the evaluation result by the end of September, and are planning to develop it into a fundamental technology to attempt to determine the manner in which information technology will be used in the future transportation industry.

<Glossary>

***1 ITS (Intelligent Transport Systems)**

Intelligent transport systems that are being developed in many countries in the world.The aim is to achieve systems which treat people, roads, and vehicles in an integrated manner, and which improve safety and transportation efficiency, and bring added convenience and also contribute to environmental preservation by making traffic flow smoother, i.e., by reducing traffic congestion.

***2 GPS (Global Positioning System)**

The global positioning system that uses information sent by 24 satellites in orbit 20,000 km above sea level and calculates the current longitude and latitude of objects in question.

***3 DoPa Network**

The network for packet communication service NTT DoCoMo provides.

An in-vehicle device of an event-triggered vehicle operations management system

-(Figure 1)Example of Conventional Vehicle Operations Management System
-(Figure 2)Overview of Event-triggered Vehicle Operations Management System
-(Figure 3)Image of Vehicle Operations Management

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