INTRODUCTION TO THIS SPECIAL FEATURE

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IATSS RESEARCH

Little more than a decade has passed since the term "intelligent transport systems" (ITS) was introduced in the early 1990s. Nevertheless, transportation systems that incorporate information technology (IT) in sophisticated ways already make an important contribution to people’s lives in Japan, Europe and the United States, especially in terms of automobile traffic. Real-time traffic information services, sophisticated car navigation systems, automatic toll collection systems, driver assistance systems and pedestrian ITS have all begun to be widely adopted even as research and development continue on other systems. Creating systems capable of gaining broad social acceptance demands research, development and debate that does not get so caught up in extending existing models that it neglects to revisit fundamentals.

In this special feature, we work with a simple definition of ITS as “sophisticated systems incorporating IT in the mobility of people and goods,” a definition that takes a mobility-oriented approach unbound by the traditional trinity of vehicles, roads and people.

Many commuters now drive their cars to the station to catch a train to work. Most are concerned primarily with finding a reasonable way to get to work; the method used is but a secondary concern. E-tags (RFID tags or RF tags) and the like are expected to bring great change to the movement of goods but the debate must look beyond commercial vehicle operation and truck platooning to the broader flow of goods including rail, ship and air.

In the twentieth century, IT targeted a virtual world outside space and time. In the twenty-first century it must tackle the real world in which computing serves actual people and goods. Indeed, the challenge for ITS is to create an environment of ubiquitous computing where people can take advantage of the benefits of computers without being especially aware of their presence.

ITS continues to develop and expand beyond traditional borders in pursuit of goals such as safety and security, efficiency, the environment, convenience and entertainment. In this issue we include the following four papers that look at the use of IT in the mobility of people and goods.

Tsugawa’s paper addresses the use of inter-vehicle communication to improve automobile safety, offering an organized, easy-to-understand overview of the history of inter-vehicle communication research, a survey of trends around the world and a review of outstanding issues.

The paper by Yoshimoto and Nemoto takes a comprehensive view of the impact of computerization on road freight transportation in terms of commerce, logistics and fleet management, proposing both a framework for analysis and clear relationships between the factors it contains.

In their paper, Nigarnjanagool and Dia discuss a system for dynamic traffic signal control that adapts to traffic flow. The system they propose varies cycle length and green lights dynamically by cycle based on the flow rate detected by vehicle sensors located above the stop lines at the entrances to signalised intersections. Traffic flow simulations have demonstrated the ability of this method to improve the performance of signalised intersections.

Kawakita and his colleagues present a fascinating paper on advances in tracking people movement. Discussing, largely from the standpoint of readability, one way to use RFID at large-scale events, their conclusions should be of great interest to anyone involved in systems development.