

SECTION 1

INTRODUCTION

1.1 PROJECT PURPOSE AND OBJECTIVES

Providing improved transit traveler information (TTI) has advanced significantly over the past 10 years with the advent of new technologies, such as automatic vehicle location (AVL) and advanced communications, and of new dissemination mechanisms and media, such as wireless application protocol (WAP), mobile telephones, and personal digital assistants (PDAs). Today, transit travelers—particularly choice riders—expect to have comprehensive information about multiple modes (including traffic information) available to them quickly, in one place or from one source, and on a variety of media. Transit agencies are being challenged to meet these travelers' needs, given declining budgets and the continuing need to provide efficient service. Paper schedules, manually operated customer information telephone services, and the need for travelers to make several telephone calls to obtain information will no longer satisfy travelers. Furthermore, transit agencies are exploring new ways to maintain existing riders and to attract new riders. Providing static and real-time transit information using new strategies is becoming a priority in many transit agencies around the world. These strategies include the use of technologies such as the Internet, dynamic message signs (DMSs), and wireless mobile devices and the redesign of traditional transit materials, such as bus schedules, to make them more user-friendly.

This new era of providing improved TTI is analogous to the new paradigm for public transportation, as described in *TCRP Report 58: New Paradigms for Local Public Transportation Organizations (1)*. To date, transportation has been viewed on a mode-by-mode or stovepipe basis, with each individual mode providing its own services and information, measuring its own performance, and rarely coordinating with other modes. This arrangement is analogous to travelers having to consult multiple nonintegrated sources of traveler information to plan a trip. The new paradigm, which supports the idea of true intermodalism, views transportation from the user's perspective rather than from the agency's perspective. In this perspective, the user does not see individual agencies providing individual services and information, but rather views multiple modes as providing one integrated service. This arrangement is analogous to travelers consulting one integrated source of traveler information to plan and take a trip. The new paradigm effort also states that "information

technology provides the single greatest opportunity to enhance the quality of the travel experience" (2).

To strengthen this analogy, the European Commission's white paper entitled "European Transport Policy for 2010: Time to Decide" discusses the "continuity of journeys" as one of several key areas for improvement (3); this concept involves not only improving the coordination of transportation services provided by several modes, but also improving passenger information by providing integrated information and payment services. This concept of improving passenger information was also highlighted in the European Commission's green paper entitled "The Citizen's Network—Fulfilling the Potential of Public Passenger Transport in Europe" (4).

Finally, the new congestion charging program that went into effect in London on February 17, 2003, is reliant on improvements in public transportation that were outlined in the Mayor of London's transportation strategy of July 10, 2001 (5). In 2 of the 10 priorities outlined in this strategy, there are specific references to improving information about public transportation as a way to improve London's transport system.

The objective of this research was to identify strategies for using information technology to improve individual mobility-related decisionmaking. The project's focus was on how public transportation providers can most effectively provide TTI, specifically, on how public transportation agencies can take maximum advantage of new and emerging technologies to better inform travelers about mobility choices. The research identified traveler information needs, assessed the state of the art in TTI systems, and developed a number of case studies in the area of improved traveler information.

To fulfill the primary objective of this research, this report presents a summary of existing practice in the area of improved traveler information. Examples are given of how public transportation providers can become part of region-based and/or community-based information dissemination systems that include—but are not limited to—hand-held, vehicle-mounted, kiosk-based, and web-based communications. The summary will provide information on the following:

- The demand for TTI,
- The state of the art in providing TTI,
- Examples of providing customer information in related industries,
- TTI as part of community information systems, and
- New directions for transit in providing traveler information.

Work accomplished as part of three related projects provided valuable and complementary input for this research:

1. *TCRP Synthesis 48: Real-Time Bus Arrival Information Systems*, which is the final product of TCRP Project J-7 Synthesis Topic SA-14, documents the state of the practice in real-time bus arrival information systems, including both U.S. and international experience (6).
2. An FTA project entitled “Real-Time Transit Information Assessment” is to identify and document successful implementations of real-time transit information systems and to provide guidance to agencies that are considering such systems. As of the publication of this report, a white paper describing the literature search and review has been published; the site visits and telephone interviews have been conducted; and a guidance document describing recommended practices in deploying real-time transit information systems has been drafted.
3. Another FTA project, “Advanced Traveler Information Systems (ATIS) Human Factors Assessment,” is being conducted to determine the following:
 - What transit information travelers want, including the type of information and message content;
 - What the preferred communications channels (media and devices) are by which to provide the information;
 - What the preferred locations are for providing the information;
 - What the preferred temporal and situational aspects of the information are (when to provide the transit information);
 - What are the impacts of and what constitutes unreliable information; and
 - What are the recommended design characteristics for effectively presenting transit information via the preferred communications channels.

The final product of this project will be guidance to transit agencies in providing transit information to the public via advanced technology in the most effective and preferred manner from the customer’s viewpoint. As of December 2002, workshops were held around the country to determine the needs, attitudes, and preferences of transit users and nonusers for TTI. The final FTA report is expected to be available in Summer or Fall 2003.

1.2 STUDY WORK PLAN

The work plan for this project consisted of six tasks, which are described as follows.

1.2.1 Task 1: Update State-of-the-Art Information

The first task was to collect and update information on state-of-the-art TTI systems. The basis of updating this information was current literature; survey responses from *TCRP Synthesis*

48: Real-Time Bus Arrival Information Systems (6); information obtained from the previously mentioned FTA project on real-time transit information systems assessment; other relevant projects conducted by Multisystems (e.g., TCRP Project J-9 Task 4 [7]); and information from other relevant projects (e.g., Volpe National Transportation Systems Center’s Transitweb [8]; A Thematic Long-term Approach to Networking for the Telematics and ITS Community [ATLANTIC]; the ATIS research conducted for Transport Direct [in the United Kingdom]; the TRansport Intermodality Data sharing and Exchange NeTwork [TRIDENT] project; and the Institute of Logistics’s project entitled “Public Transport Information Web Sites: How to Get It Right” [also in the U.K.]).

Other sources of information that were reviewed for this report include the following:

- A summary of information provided in FTA’s *APTS: The State of the Art—Update 2000* and *APTS Deployment in the U.S.—Year 2000 Update* reports (9, 10);
- Agencies that provide real-time and static transit information via PDAs, mobile telephones, and the Internet (e.g., King County Metro’s MyBus, Secondkiss™, ShuttleGirl™, Zero-Sixty Corporation’s Concourse™, and Nottingham City Transport’s [in the U.K.] next bus text messaging);
- Agencies that provide real-time transit information for a specific bus stop (e.g., Portland’s Tri-County Metropolitan Transportation District of Oregon [Tri-Met] and the SMART_{TRAC} system at the San Joaquin Regional Transit District); and
- Agencies that provide real-time arrival and departure information at the bus stop, transit center or station, or both.

1.2.2 Task 2: Summarize Experience of Other Industries in Providing Customer Information

The second task consisted of collecting information on the practices of other industries in providing customer information. This information was collected by conducting telephone interviews with key personnel in several other industries and by conducting web searches. The industries contacted included the following:

- Airlines and other industries that provide real-time customer information via phone, cellular telephone, alphanumeric pager, PDA, and e-mail (e.g., American Airlines Flight Status Notification system, the Weather Channel’s My Weather—Get Weather Anywhere®, and Notify! by the Weather Channel);
- Package delivery companies that provide customer information via the Internet (e.g., United Parcel Service InfoNoticeSM, Federal Express InSightSM);
- Location-based content services/portable transit information (e.g., global positioning system [GPS] mobile phones, Vindigo, GeePS, go2Systems); and
- Real-time itineraries, including directions, on mobile devices.

1.2.3 Task 3: Summarize Transit's Role in Community Information Systems

An examination of how ATISs for transit can be part of community-based information networks was also conducted. For example, in Nottinghamshire County, U.K., a traveler information system called "TravelWise Nottingham" is provided on the Internet: "The purpose of the Travelwise Centre is to provide extensive traffic and travel information to the residents of Nottinghamshire who wish to explore and use alternatives to travelling alone by car" (11). The information is available via the Internet, local radio broadcasts, a telephone hotline, and publications. This system is a partnership of the City of Nottingham, the U.K.'s Highways Agency, the Nottinghamshire County Council, and BBC Radio Nottingham.

1.2.4 Task 4: Identify Potential "New Directions" in TTI

In recent years, more transit agencies in the United States are providing TTI using the latest technology. While many agencies are beginning to embrace a customer focus, there is still reluctance from some agencies to address customer information needs. Agencies typically deploy technology to improve internal operations first and customer service second. Since the deployment of real-time customer information is based on the successful deployment of systems that improve internal operations, agencies tend to focus most of their efforts on these backbone systems.

The purpose of this task was to determine how transit can learn from the experiences of (1) public transportation agencies in other countries, particularly in Western Europe, that have embraced and provide real-time customer information using a variety of dissemination media, and (2) other industries that provide customer information using innovative techniques.

1.2.5 Task 5: Prepare and Submit Draft Final Report

A preliminary draft final report was submitted for review by the project oversight panel.

1.2.6 Task 6: Prepare and Submit Revised Final Report

Based on panel comments received on the draft, a revised final report was prepared.

1.3 REPORT ORGANIZATION

The report is organized as follows:

- Section 2 provides a review of the literature on the subject of TTI;

- Section 3 describes the demand for TTI;
- Section 4 presents the state of the art in TTI;
- Section 5 identifies and describes key TTI systems in existence in the United States and Europe;
- Section 6 provides a summary of customer information provision from industries outside of the public transportation realm;
- Section 7 discusses TTI as part of regional and community-based information systems; and
- Section 8 provides a discussion of strategies that transit should consider taking advantage of new and emerging technologies and techniques to better inform travelers about mobility choices.

Throughout the report, key resources are noted, including Internet website addresses. Please note that website addresses are subject to change; where an address is noted, the date when the address and content was valid also been included.

1.4 REFERENCES AND ENDNOTES FOR SECTION 1

1. *TCRP Report 58: New Paradigms for Local Public Transportation Organizations—Task 5 Report: Opening the Door to Fundamental Change*, Transportation Research Board of the National Academies, Washington, DC: 2000; http://trb.org/trb/publications/tcrp/tcrp_rpt_58.pdf.
2. *TCRP Report 58*, p. 15.
3. European Commission. "White Paper: European Transport Policy for 2010: Time to Decide," European Communities, 2001; http://europa.eu.int/comm/energy_transport/library/lb_texte_complet_en.pdf.
4. European Commission. "Green Paper: Fulfilling the Potential of Public Passenger Transport in Europe," COM(95)601, November 1995; <http://europa.eu.int/en/record/green/gp001en.pdf>.
5. K. Livingston. *The Mayor's Transport Strategy*, July 10, 2001.
6. Schweiger, C.L. *TCRP Synthesis 48: Real-Time Bus Arrival Information Systems*. Transportation Research Board of the National Academies, 2003.
7. *TCRP Report 84: e-Transit: Electronic Business Strategies for Public Transportation, Volume 4: Advanced Features of Transit Websites*. Transportation Research Board of the National Academies, 2003.
8. <http://transitweb.volpe.dot.gov/>
9. Casey, R. F., L. N. Labell, L. Moniz, J. W. Royal, C. L. Schweiger, M. Sheehan, T. Sheehan, A. Brown, M. Foy, M. Zirker, J. B. Marks, B. Kaplan, and D. Parker. *Advanced Public Transportation Systems: The State of the Art—Update 2000*, DOT-VNTSC-FTA-99-5 and FTA-MA-26-7007-00-1, FTA/Office of Mobility Innovation, December 2000; http://www.itsdocs.fhwa.dot.gov/JPODOCS/REPTS_TE/13583.pdf.
10. Casey, R. F. *Advanced Public Transportation Systems Deployment in the United States—Year 2000 Update*, DOT-VNTSC-FTA-02-06 and FTA-MA-26-7007-02.1, FTA/Office of Mobility Innovation, May 2002; http://www.itsdocs.fhwa.dot.gov/JPODOCS/REPTS_TE/13680.html.
11. <http://utc.nottsc.gov.U.K./index.htm>.