

4. Methodology and Results

The transit Web site research methodology was developed to identify and report on the potential of using Internet resources in the transit industry to provide customer information on the Web. The resulting research findings are intended to assist the transit industry and its constituent agencies in making decisions about how to take advantage of its Web investments, improve customer information, and ultimately enhance overall customer service. The project's focus has been to create an initial knowledge base for transit agencies that are planning or enhancing their Web sites, with special attention to best practices and lessons learned.

As discussed in Section 4.6, the telephone surveys of selected transit agencies were originally intended to simply summarize the advanced Web site features studied and provide the data for a discussion of cross-cutting issues in Section 8 and lessons learned and next steps in Section 9. However, the project team obtained a great deal of agency- and advanced feature-specific information that it felt would be useful to the readers. Consequently, the agency summaries were expanded into case studies so that the reader would have access to more detailed information.

4.1 Introduction/Background

Developing a suitable methodology was challenging, since Web site services can be deployed in many different ways – due to rapidly changing applications, service providers, and technologies that support Web site design and deployment. The overarching issues that guided the development of the methodology and the subsequent research process, which also addressed usage trends and technology applications, included:

- Current practices, design, and functionality;
- Project objectives;
- Implementation issues;
- Outcomes / benefits;
- Planned improvements; and
- Lessons learned and best practices.

Two of the project team's primary considerations when gathering this information are worth highlighting. First, the team focused on obtaining information from transit staff with policy-level and/or day-to-day responsibility for an agency's Internet customer information strategy and deployment. Second, the project team sought to obtain information about a diverse set of Web sites – representing a range of agency types – large and small, urban and rural, single mode and multi-modal – and involving both complex and simple approaches to advanced Web site feature development. For example, Anchorage Public Transportation was selected *because* it is a small agency and its *Dynamic Route Generator*, or itinerary planner, is a relatively simple application.

Findings and recommendations resulting from this research are based upon a methodology that included the following phases:

1. Review prior institutional efforts and perform a highly targeted information search;
2. Select transit agencies whose advanced Web site features were worth investigating;
3. Develop a telephone survey for transit agency representatives;
4. Conduct detailed telephone surveys with transit agency representatives; and
5. Synthesize telephone survey information with previous research phases of the project.

The project team's original Work Plan was intended to take a broad look at transit Web sites. However, as mentioned earlier – and described below – the project team discovered that there was already sufficient documentation about the basic components and best practices of commercial and transit Web sites. For example, one excellent report on transit Web site issues is TCRP Synthesis Project SB-8, "Effective Use of Transit Web Sites."⁶ The report was very thorough in covering the fundamental issues listed below:

- Overview of transit Web site development;
- Analysis of the size of the potential and actual audiences for transit sites;
- Usage data from two dozen agencies;
- Review of home page design and navigation issues;
- Next directions for transit web site development;
- Administration considerations;
- Site promotion;
- Site costs; and
- Summary of key considerations for transit Web site design.⁷

However, this report only touched on advanced Web site features, in the section on "next directions." Other sources of general Web site analysis include:

- "Features of Traffic and Transit Internet Sites;"⁸
- "Summary Information: Transitweb, A Web Site Design Resource for Transit Agencies;"⁹

⁶ See Schaller Consulting at <http://www.schallerconsult.com/transitwebsite/scope.htm> or <http://www.schallerconsult.com/transitwebsite/sb8.htm>. Review the final TCRP project scope at <http://www4.nationalacademies.org/trb/synthesis.nsf/bf69b880be9a43608525677c004f9dc8/75cd65fe147ab20e85256929004dad39?OpenDocument>.

⁷ See the report summary and other findings, including "Effective Transit Web Sites," "Six Principles for Development of Transit Web Sites," "Twenty-nine Good Practices for Design of Transit Web Sites," and "Useful Links for Transit Web Site Development" at Schaller Consulting, <http://www.schallerconsult.com/transitwebsite/sb8.htm>

⁸ Prepared by Jonah Soolman and Sari Radin, Volpe Center Economic Analysis Division, February 2000. See or download the full report at http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/9gn01!.pdf. Review a summary of the findings at http://www.nawgits.com/icdn/atistudy_tran.html. As far as advanced features are concerned, only two yes/no questions were asked about AIP and RTD.

- “A Usability Analysis of Selected Federal Government Web Sites;”¹⁰ and
- “Usability Basics.”¹¹

Despite the many sources of Web site information, the project team found a dearth of in-depth assessments of the advanced features of transit Web sites, such as:

- Automated Itinerary Planning Systems (AIP);
- Real-time display of transit service status (RTD); and
- E-mail and related notification systems accessible via the Web (EMN).

The project team also felt that transit agencies might benefit from applying aspects of customer relationship management (CRM) on their Web sites. CRM is an increasingly common component of commercial Web sites. As defined on a Web site that offers an information technology encyclopedia, CRM is:

...an information industry term for methodologies, software, and usually Internet capabilities that help an enterprise manage customer relationships in an organized way. For example, an enterprise might build a database about its customers that described relationships in sufficient detail so that management, salespeople, people providing service, and perhaps the customer directly could access information, match customer needs with product plans and offerings, remind customers of service requirements, know what other products a customer had purchased, and so forth.¹²

As discussed later in Section 7, Technology Considerations, CRM from the transit Web site perspective can involve managing customer information and preferences to provide personalized and customized Web experiences for individual customers. Given the value that such an approach could offer many transit agencies, the project team sought out transit Web sites and/or advanced features that employ elements of CRM.

4.2 Review Prior Institutional Efforts / Perform Information Search

The project team reviewed Web sites of private sector companies and projects or activities under the auspices of TCRP, USDOT’s ITS Joint Program Office, the USDOT’s Volpe Center, and American Public Transportation Association (APTA) to identify Web site research efforts. Some of the more important sources included the following:

⁹ Review this summary report on the Transitweb site, <http://transitweb.volpe.dot.gov/Summary.asp>.

¹⁰ Written for the Office of Government Services, Experience Design Group, February 2002. Review or download document at [http://www.andersen.com/resource2.nsf/vAttachLU/US_Fedl_Web_Usability_Study/\\$File/US_Fedl_Web_Usability_Study.pdf](http://www.andersen.com/resource2.nsf/vAttachLU/US_Fedl_Web_Usability_Study/$File/US_Fedl_Web_Usability_Study.pdf)

¹¹ Review the full report at the National Cancer Institute’s *Usability.gov* Web site at <http://usability.gov/basics/>. See also the link for “Usability and the Web: An Overview,” by George Murray and Tania Costanzo of the National Library of Canada, <http://www.nlc-bnc.ca/9/1/p1-260-e.html>.

¹² See the full definition of CRM at the Whatis.com Web site at http://searchcrm.techtarget.com/sDefinition/0,,sid11_gci213567,00.html.

- Commercial Web sites associated with transportation, such as travel planning services, airline or inter-city rail Web pages, and Web-based driving direction and mapping services;
- “Advanced Traveler Information Service (ATIS): What do ATIS Customers Want?,”¹³
- Effective Use of Transit Web Sites: TCRP Synthesis Topic SB-8;¹⁴
- Enhancing Transit Information: Problem Introduction and Experiences;¹⁵ and
- “Advanced Traveler Information Systems (ATIS): Private Sector Perceptions and Public Sector Activities”.¹⁶

“Transitweb, A Web Site Design Resource for Transit Agencies” was another excellent source of information and transit agency Web sites.¹⁷ This project, whose home page is shown in Figure 4.1, is supported and managed by the FTA/FHWA ITS Joint Program Office (JPO) with assistance from staff at the Volpe Center. A full bibliography can be found in Appendix A.

Each of these reports or activities turned out to be an important component of the J-09 transit Web site project, providing important background information, such as:

- A summary of the current status of transit Web site development;
- A working knowledge of the current state of the practice for transit and ATIS Web sites;
- Essential Web site and customer service issues and related information needed to design the telephone survey; and
- A list of transit agency contacts that could potentially be included in the telephone surveys.

4.3 Select Transit Agencies

The project team compiled an initial list of approximately 45 transit Web sites through the literature search and Web site reviews described above. Preliminary on-line reviews were conducted to identify Web sites that had one or more of the three primary advanced features, as well as CRM components in some cases. Once a pool of suitable Web sites had been identified, detailed on-line reviews were conducted to determine the best mix of transit agencies and advanced features on which to report.

As noted in this Section’s introduction, final selections were made based on the desire to obtain diverse information about advanced transit Web features from a mix of different agencies and advanced feature applications. In doing so, for example, the project team

¹³ Produced under the auspices of the JPO. Read or download report at http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/9h801!.pdf.

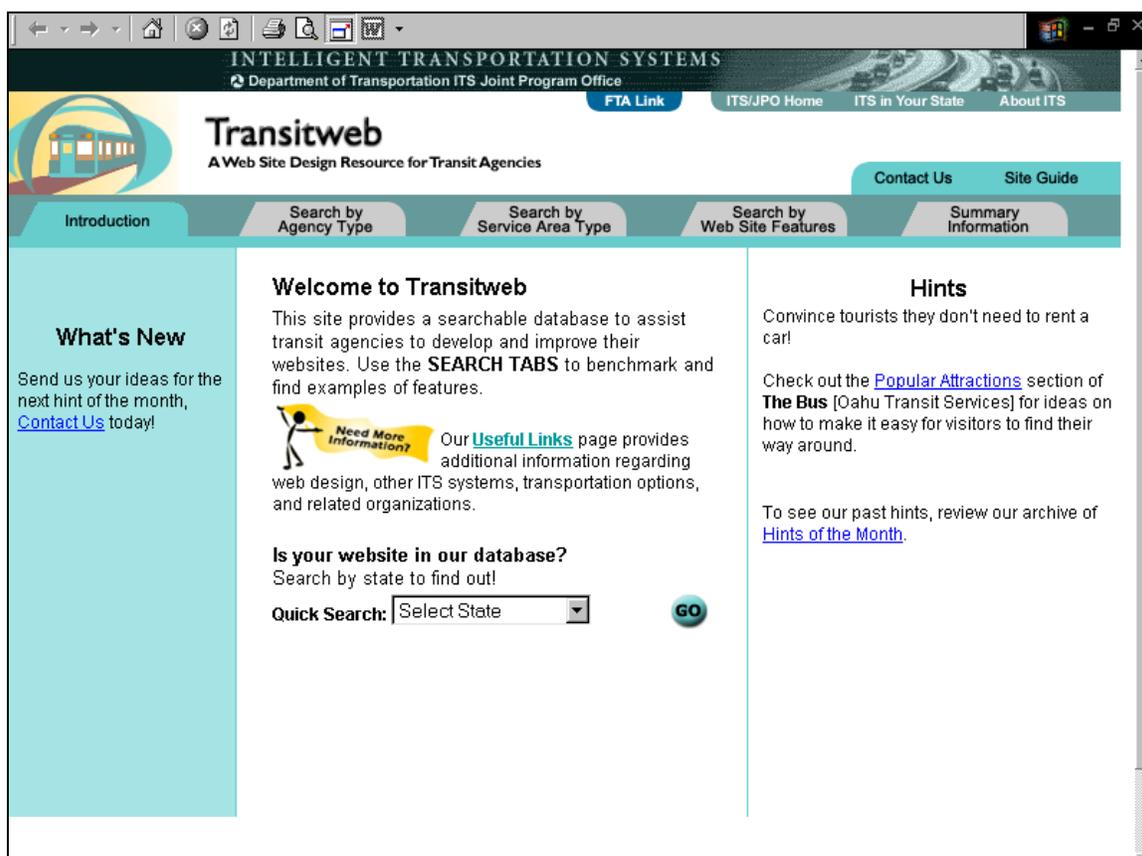
¹⁴ Op. Cit.

¹⁵ Cluett, Christopher. Battelle Transportation Division. 1/1/01

¹⁶ http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/9h701!.pdf.

¹⁷ The Transitweb Web site can be viewed at <http://transitweb.volpe.dot.gov/introduction.asp>.

Figure 4.1: JPO *Transitweb* Home Page



had to choose among a variety of similar AIP systems that had been developed by the same vendors. This search and evaluation resulted in the selection of 16 different organizations.

4.4 Develop Telephone Surveys

A basic telephone survey outline was designed for each of the advanced Web site features (AIP, RTD, and EMN/CRM). The survey outline for the AIP strategies, the longest of the three, included 51 questions. The outlines for the RTD and EMN surveys were similar, but somewhat shorter, because the on-line Web site reviews conducted by the project team showed that those topics were less complex than AIP.

Each survey outline was designed to elicit comments on emerging developments of each of the three advanced transit Web site features. The outlines were customized in some cases to reflect observations made during the Web site reviews, and were designed to encourage dialogue on the four crosscutting issues identified for the project¹⁸. The survey questions were organized into the following sections:

¹⁸ The cross-cutting issues identified were objectives/promise, applications/technology, value creation, and implementation issues.

- Introductory Questions
- Current On-line Practices
- System Design
- Administration and Maintenance
- Potential Improvements and Enhancements
- Current and Planned Software and Technology
- Project Objectives / Realization
- Value Creation / Perceived or Actual Benefits
- Implementation Issues and Lessons Learned

4.5 Conduct Detailed Telephone Surveys

Once the appropriate contact persons were identified and contacted, the 16 telephone surveys were undertaken between December 2001 and February 2002. Follow-up questions were addressed during March 2002. The completed survey forms averaged about 19 pages, including both questions and answers recorded by the interviewer. While conducting the surveys, the project team encouraged respondents to expand on issues of local or personal concern. For this reason, not all questions were answered by all respondents. A copy of the AIP survey outline, which is representative of the other two survey outlines, is included in Appendix C.

4.6 Synthesize Telephone Survey Information

The telephone survey responses and Web site reviews of each agency have been summarized as case studies. Each of the case studies is generally organized as follows:

- System design and functionality;
- Project objectives;
- Implementation issues (e.g., system design, costs, start-up and growth, data accuracy, and quality control, etc.);
- Outcomes/benefits (e.g., customer satisfaction and impact on call centers); and
- Planned improvements (e.g., mapping capabilities, improving landmark lookup, multiple itineraries, CRM, and real-time information).