

## SECTION 7

### TTI AS PART OF A COMMUNITY INFORMATION SYSTEM

An increasing number of metropolitan areas are developing regional ATIS and 511 systems (*1*), which are responsible for disseminating traffic and travel information by telephone, websites, or other means. Transit agencies are frequently partners in these systems, and TTI information that the transit system generates to inform existing and potential passengers is contributed to the regional pool of data used to make travel decisions.

The most common form of participation in regional ATIS so far has been to provide links to a transit agency's stand-alone information resources. Often, a regional ATIS website will provide live links to the websites of the area's transit and paratransit service providers and to a regional telephone service that transfers callers to a transit system's telephone information system. More and more often, North American transit agencies are providing real-time service information, itinerary planning, or both; some integration of the transit information with information about other travel alternatives is becoming more than just a desire: from the customers' perspective, it is becoming a necessity.

Because public transportation content is considered a key content category, transit participation in the 511 system has been growing since the system's inception in 2000. For example, the 511 systems deployed in the San Francisco Bay Area and in Utah contain significant transit content. In the next section, (Section 7.1), information pertaining to transit's participation in the 511 system is presented, using UTA as an example.

In a companion paper to a survey of ATIS websites, Volpe National Transportation Systems Center staff compared private-sector perceptions with public-sector activities in ATIS (*2*). Naturally, traffic information figured more prominently than did transit information; however, with regard to the latter, the authors concluded:

Transit agencies are doing a good job of providing static information, such as route schedules and fares, to the public. While some real-time information is collected on vehicle time and location, much less is being transferred to private information service providers (ISPs) or disseminated directly to the public. In part, the lack of transfer results from lack of interest on the part of ISPs. There may be a mismatch between metropolitan areas where there is a potential market for real-time transit data and metropolitan areas where data are being collected.

This section contains a brief summary of TTI systems that are part of regional information networks, community-based information networks, or both. There are several locations in the United States and abroad that have integrated TTI with other travel and nontravel information (about local communities and regions). Five primary examples are described in this section:

1. Utah's 511 System,
2. Nottinghamshire County's TravelWise,
3. Puget Sound's Smart Trek,
4. Chicago's Gateway Traveler Information System, and
5. The European Union's Transport Intermodality Data Sharing and Exchange Network.

#### 7.1 UTA'S PARTICIPATION IN UTAH'S 511 SYSTEM

Utah DOT's (UDOT's) transportation management program, called CommuterLink, was established in April 1999. This ITS partnership includes UDOT, Salt Lake City, Salt Lake County, FHWA, UTA, Wasatch Front Regional Council, and the Utah Department of Public Safety. CommuterLink, considered the "public face" of multimodal ITS in the region, facilitates the sharing of resources and marketing efforts of participating agencies. UTA has always been part of CommuterLink, which made it easy for UTA to play a key role in the 511 system efforts.

CommuterLink helped build an excellent relationship among the participating agencies, which was critical to the success of Utah's 511 program. The development of the 511 system in Utah was expedited because of the Winter Olympics, which were held in February 2002 in Salt Lake City. The 511 Advisory Group within CommuterLink was established, consisting of officials from UDOT, UTA, Salt Lake City, Salt Lake County, the Utah Department of Public Safety/Highway Patrol, and the Utah Trucking Association. This advisory group was and continues to be essential in shaping the vision for traveler information in Utah and in coordinating the partners' actions. Planning for the 511 system began in Spring 2001, the design of the system began in Fall 2001, and the system became operational in December 2001.

UDOT was the lead agency for the 511 systems efforts, but UTA was an active participant. UTA provided transit-specific requirements to be included in the design. UTA and other advisory group members monitored and reviewed the design. In reviewing the design, UTA ensured that the system would be expandable and capable of meeting future transit needs. For example, UTA is currently upgrading the 511 system to include real-time train arrival information.

On December 18, 2001, Utah launched its 511 Traveler Advisory Telephone System. The system integrates information on road and weather conditions, incidents, congestion, transit information, and construction activities. The initial system included options for the following:

- **Traffic information:** Incident-oriented and weather-related restriction information for principal state roads and primary arterials in the Salt Lake City area and throughout the state;
- **Transit information:** UTA information on service disruptions, general messages, fares, and so forth, and the option to transfer to UTA's Customer Service Center to access a live operator;
- **Road conditions:** Weather conditions on principal state roads throughout the state (this is the same information that is currently provided via the current Utah Road Conditions Hotline); and
- **Olympics information (through the time of the Olympic Games):** Information provided by the Salt Lake Olympic Organizing Committee regarding events, transportation services, and parking and including the option of transferring to a call center to make a reservation for bus transportation to the mountain venues.

Each agency is responsible for providing its own information to the 511 system. The advisory group believed that, initially, it was not an absolute necessity to provide real-time information or all kinds of information (such as itinerary planning): therefore, transit provides static information through the 511 system. UTA is, however, planning on adding real-time train arrival information to the 511 system, as well as by phone, Internet, and WAP devices.

In an effort to expedite its planning and design efforts, the advisory group held four focus groups early in the process to help the group understand how to design the system. UTA was involved in selecting a firm to conduct the focus groups and in evaluating and monitoring focus group activities and discussions. Focus groups were engaged in evaluating different approaches to language as well as to technologies. The resulting menu structure and information provided by the system were based on input from the focus groups. Key considerations for the system suggested by the focus groups included frequent updates to the information, providing information on road conditions, and providing either a live operator or an IVR system.

The 511 system keeps track of how many callers access each mode from the menu. The number of callers accessing each mode determines the ratio of maintenance cost for each participating agency. As of February 2003, about 1,000 callers were accessing UTA information per month. This call volume has resulted in minimal maintenance cost to UTA; hence, UDOT has not asked UTA to pay for these calls. However, when the volume of calls increases, UTA anticipates covering its share of the maintenance costs.

## 7.2 NOTTINGHAMSHIRE COUNTY'S TRAVELWISE

In the United Kingdom, Nottinghamshire County is located approximately 130 miles north-northwest of London. There are several communities in the county, and information about them and the county is readily available on the Internet at [www.nottscc.gov.uk/](http://www.nottscc.gov.uk/) (see Figure 76). In addition to detailed information about the county and individual communities, there is a link to traffic and travel information. With one click, you can enter the Nottingham TravelWise Centre ([utc.nottscc.gov.uk/](http://utc.nottscc.gov.uk/)) (see Figure 77), which provides comprehensive traffic and transit and general travel information for the Nottinghamshire area.

TravelWise is a public awareness initiative whose purpose is to provide travelers with information prior to and during their trip so that they make the most informed decisions about the mode(s) they will use and the route(s) they will take. The service can be accessed via the Internet or telephone. TravelWise caters to automobile users, public transport users, pedestrians, cyclists, and travelers with disabilities. It is not anti-automobile, but it does promote more sensible use of automobiles by aiding travelers in making informed travel decisions and by encouraging travelers to think about the implications of individual travel decisions. TravelWise activities include local advertising (local radio, leaflets, etc.); working through local groups; making schools packs; and providing public transport travel information (3).

The Nottingham TravelWise system is a partnership of the City of Nottingham, the U.K.'s Highways Agency, the Nottinghamshire County Council, and BBC Radio Nottingham. The TravelWise Centre opened in October 1999 and is the U.K.'s first Mobility Centre. TravelWise started as a local authority travel awareness initiative begun by the Hertfordshire County Council in 1993. It has turned into a national campaign in the United Kingdom through the establishment of a National TravelWise Association with more than 120 local authorities participating (4).

Traveler information has been broadcast from Nottinghamshire's Traffic Control Centre for over a decade. In December 1997, the information service was enhanced by using the Internet as another information medium. Since 1997, the

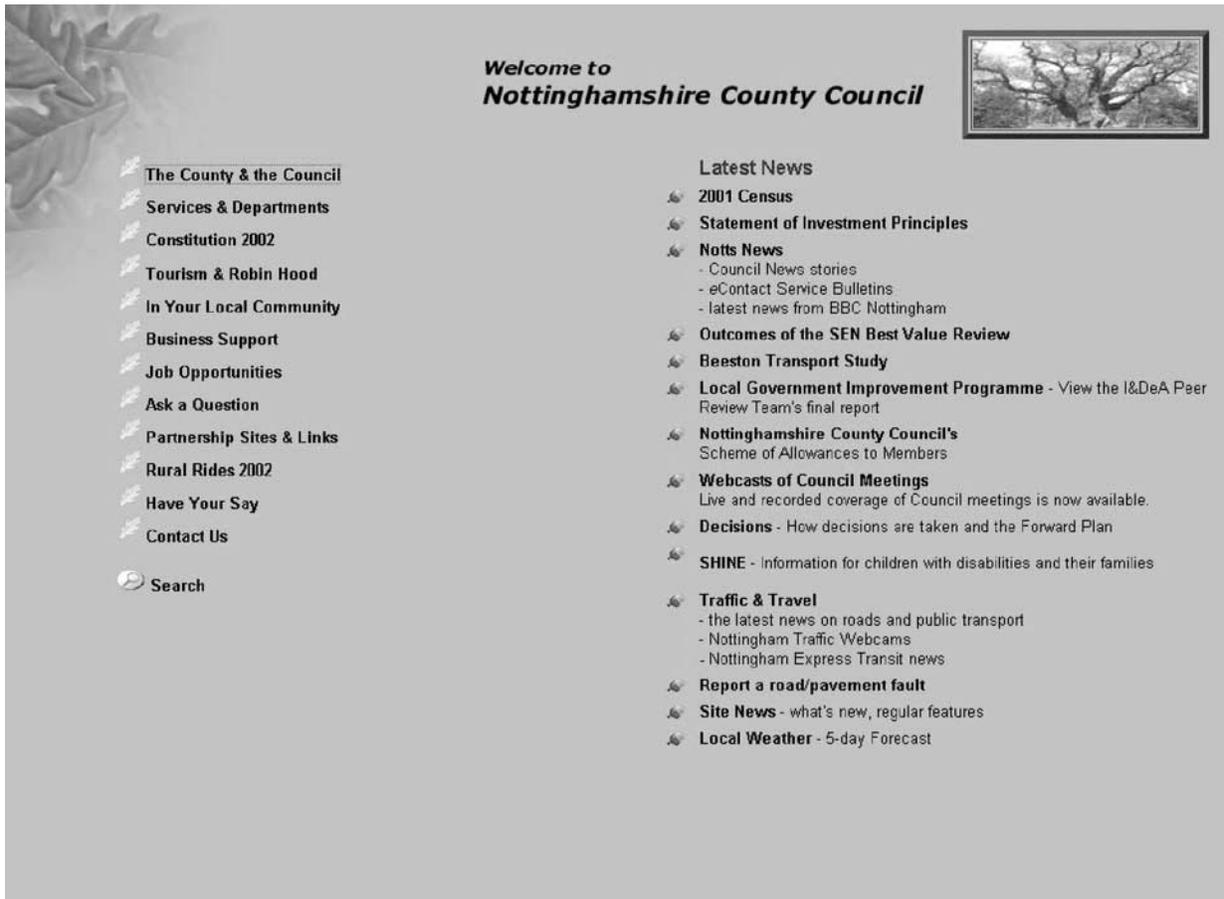


Figure 76. Nottinghamshire County website.

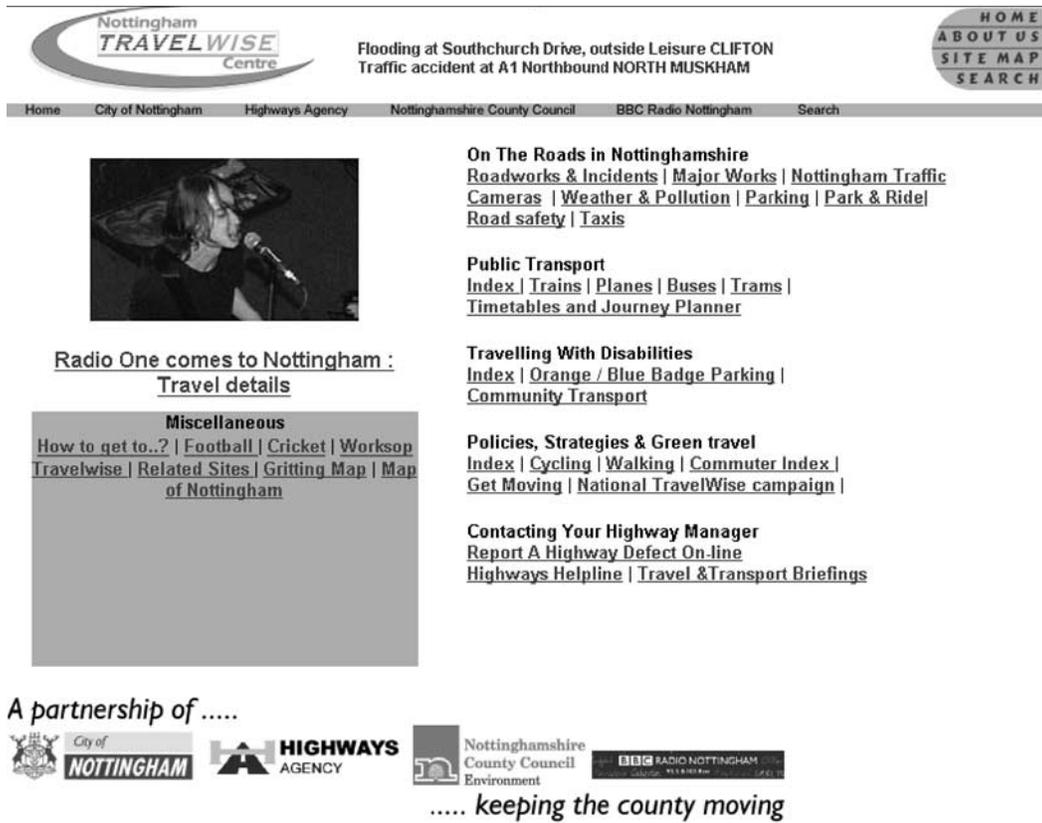


Figure 77. Nottingham TravelWise website.

website has been expanded to cover more information about traffic conditions, parking, public transportation information, bus and train journey planners, weather conditions, and contact numbers for various highway problems.

In Nottinghamshire County, as part of TravelWise and a new travel strategy called “The Big Wheel” (see [www.thebigwheel.org.uk](http://www.thebigwheel.org.uk)), real-time bus arrival information is being tested on Route 11. This real-time information is being provided at selected bus stops on the route (see Figure 78) and via the Internet (see Figures 79 and 80). Also, static timetable “next bus” information is being provided on several routes via mobile phones, as part of the Advanced Traffic and Travel Information system (ATTAIN) project. ATTAIN began in December 2001, providing information on one specific bus route, and was expanded in Spring 2002 to several more routes. Eventually, the plan is for ATTAIN to provide real-time information.

In addition to the public transport information already described above, Nottingham’s TravelWise advertises the National Public Transport Information phone number, 0870-608-2-608. This hotline number is part of a U.K. initiative called Traveline (see logo in Figure 81), which provides customized local and national public transport information such as journey planning, costs, and connections for all modes. Traveline replaced Nottinghamshire County’s Buses Hotline. This national service is provided by a number of regional call centers across the United Kingdom.

### 7.3 PUGET SOUND’S SMART TREK

Traveler information is an integral part of the community information provided via the Internet about the Washington State’s Puget Sound area. The Puget Sound Regional Council (see Figure 82) provides a direct link to Smart Trek, which provides extensive traveler information, including some real-time information, for all travel modes in the greater Seattle area. As shown in Figure 83, information on traffic conditions, ferries, transit and travel planning are all on the Smart Trek website.

Smart Trek was developed originally as part of Seattle’s Metropolitan Model Deployment Initiative, which was a U.S. initiative to establish model deployments of integrated ITS in metropolitan areas that demonstrated regional, multi-modal traveler information services and integrated transportation management systems (5):

Washington State Department of Transportation (WSDOT) entered into a partnership with public and private organizations to implement ITS solutions [in the Puget Sound area]. This partnership was named “Smart Trek”. . . . The Smart Trek program built upon existing ITS institutional relationships and infrastructure in the Seattle region to showcase an integrated Intelligent Transportation Infrastructure (ITI). Smart Trek integrated new and existing data sources; established a transportation information network that is integrated, regional, and multimodal; and greatly expanded the distribution of traveler information.

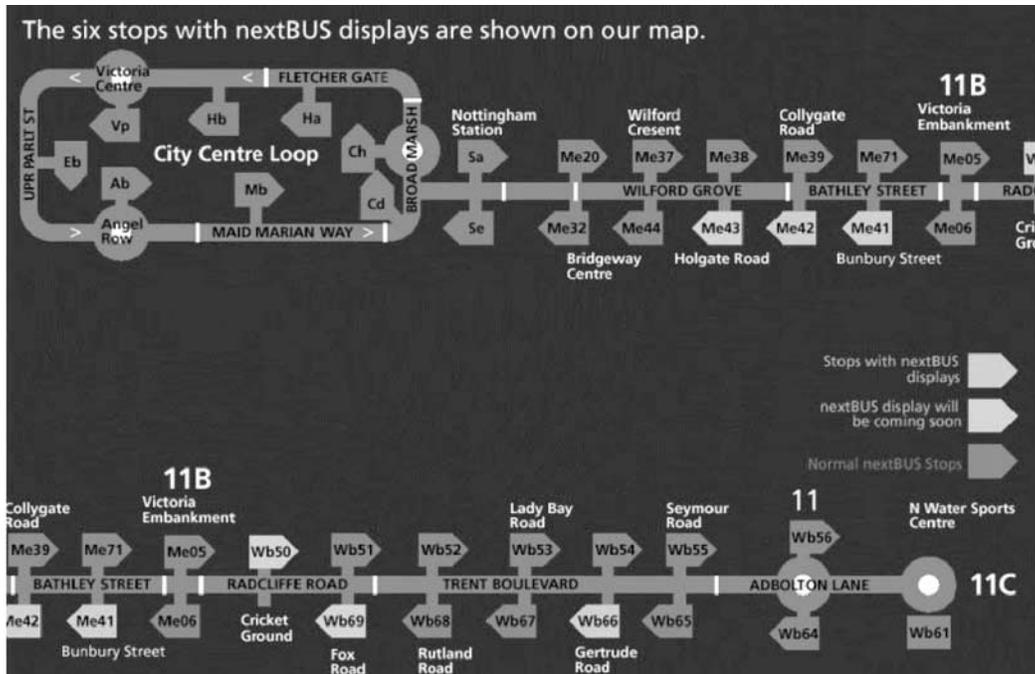


Figure 78. Stops on Route 11 that have and will have next bus displays.

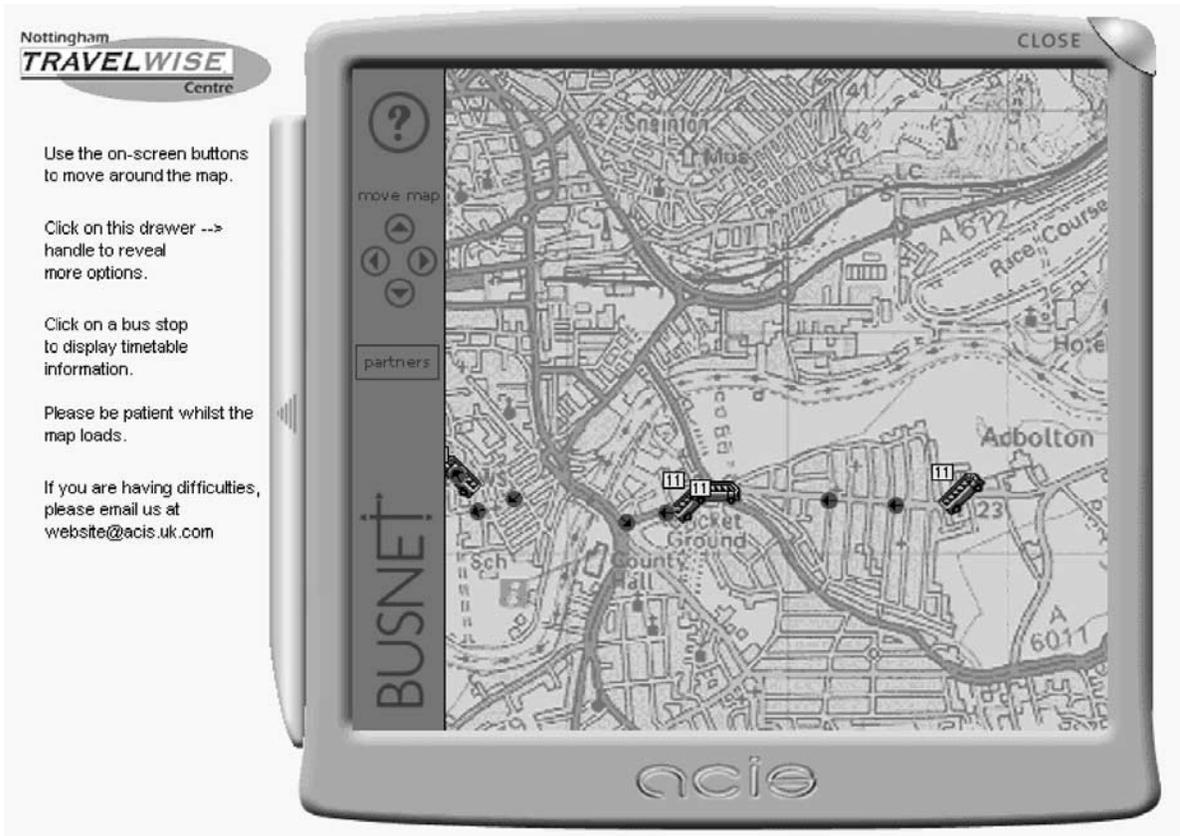


Figure 79. Real-time bus information on Route 11 via the Internet.

**7.4 CHICAGO'S GATEWAY TRAVELER INFORMATION SYSTEM**

The Gary–Chicago–Milwaukee corridor, with many ITS systems already in place, is the subject of a significant plan for ITS deployment. This corridor, which was established as an

ITS Priority Corridor in 1991, “links the transportation infrastructures in Illinois, Indiana and Wisconsin, including all major freeways, airports, transit, commuter, and freight railroad systems” (6). In 1995, a regional Multi-Modal Traveler Information System (MMTIS) was defined in a Corridor Program Plan. The MMTIS, also known as the “Gateway,” includes participation from all Chicago transit agencies (also know as the service boards: Chicago Transit Authority [CTA], Metra, and Pace) under the umbrella of the Chicago Regional Transportation Authority (RTA), in addition to all corridor traffic management agencies.

The Gateway Traveler Information System (TIS) is a distributed system that collects static and dynamic data through regional hubs and distributes “corridor-wide data to operating agencies, information service providers, such as the media, and to planners and researchers. Regional hubs also have the

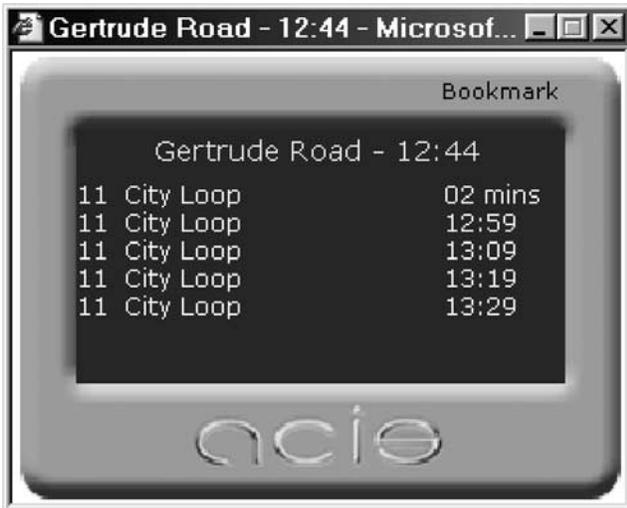


Figure 80. Real-time bus information for the Gertrude Road stop on Route 11.



Figure 81. National Traveline logo.

Figure 82. Puget Sound Regional Council homepage.

ability to distribute data they collect but will not be distributing corridor-wide data” (7). Transit is a prominent player in the Gateway TIS, and the entry point to the Gateway TIS for Chicago-area transit agencies is the Illinois Transit Hub (ITH). A functional architecture for the ITH was developed by the Chicago RTA, which includes several key elements, as follows (8):

- Data provided to the ITH by Chicago-area transit operators will include route and schedule information, fare information, current on-time status and location, annulments and cancellations, late pullouts, delays with cause and expected duration, parking occupancy information, and incident reports. Service boards may also provide certain requests or advisories to traffic management centers through the ITH, including center-to-center signal priority requests and information concerning highway-rail intersection status.
- Data forwarded by the ITH to the Gateway includes selected transit schedule, route, fare and current on-time status information, as well as transit incidents. The ITH will forward updated information every minute to ensure that the information provided to travelers is as current as possible.
- The ITH tracking database will support various traveler information applications by maintaining current location and on-time status for any vehicles reported to the ITH.
- An ITH website will provide a full range of information access to transit travelers and, in the future, will support management of traveler profiles for personalized TTI.
- The ITH will obtain and provide traffic information relevant to transit operations from the Gateway system. This information may include traffic incidents affecting transit routes, travel times, road closures or lane reductions, and information on highway-rail interchange status.
- The ITH will host specialized applications such as the Transfer Connection Protection System, which will examine transit status reports to identify endangered connections, and Active Transit Station Signs at joint stops or at stations that display status information for more than one service.

Puget Sound Regional Council



SMART TREK

- Home
- Real-Time Info
- Transit Schedules
- Directions
- Telephone
- Visiting Puget Sound?

Real-Time Information

- Current Travel Times by route
- Freeway Congestion
- Incident Reports
- Ferry VesselWatch
- BusView (King County Metro)
- My Bus
- Mountain Passes
- rWeather

Traffic Cameras

- Central Puget Sound
- My Commute
- Seattle
- Bellevue
- Tacoma
- Hood Canal
- Snoqualmie Pass
- Stevens Pass

Ferry Cameras

- Downtown Seattle Terminal
- Anacortes Terminal
- Bainbridge Island Terminal
- Clinton Terminal
- Edmonds Terminal
- Friday Harbor Terminal
- Mukilteo Terminal
- Orcas Island Terminal
- Vashon Island

Custom Info

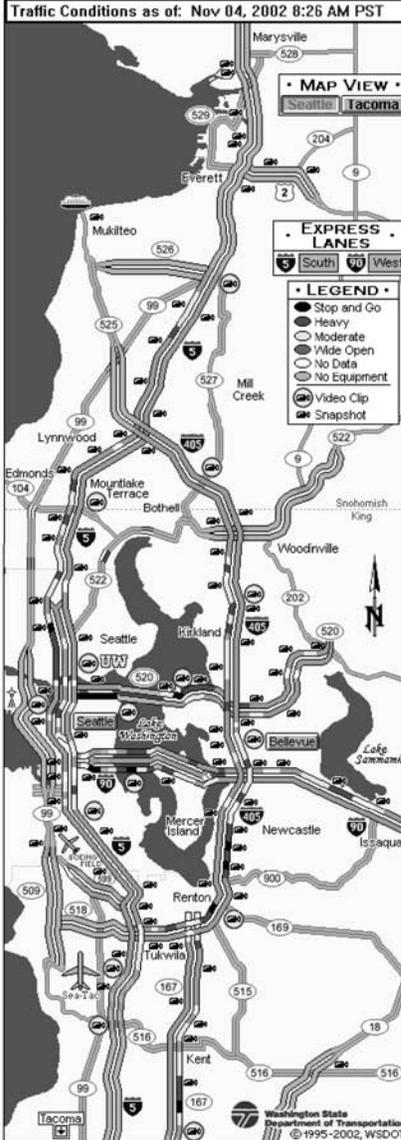
- E-mail Alerts (ferry,transit,roads)
- SeaTraffic for Palm VII

Check This Out!

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- Road Closures
- State-Wide Info
- Traffic TV
- TransitWatch
- Riderlink
- Online Ridematching
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Press "Ctrl + D" now.

Traffic Conditions as of: Nov 04, 2002 8:26 AM PST



The Region's Transportation Plan



Regional Transportation Improvement Program



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Figure 83. Puget Sound traffic information.

Chicago RTA’s development and deployment of the ITH depends on the transit ITS infrastructure, which is focused in four distinct technology areas: (1) traffic signal control, (2) traveler information, (3) transit management, and (4) electronic payment. Many projects are currently being conducted in these areas to provide the necessary infrastructure. While Chicago RTA realizes that there are significant challenges for transit to coordinate on a regional scale to fully participate in the Gateway, it has identified three opportunities for coordination that emphasize the benefits of its approach (9):

1. Service improvements through better dispatching information and tools that provide decision support for interagency transfers and transit signal priority operations;
2. Traveler information availability that includes not only schedules and fares, but also up-to-date on-time status for buses and trains; and
3. Sharing of information between transit and traffic managers, improving both highway and transit performance and safety and security of trips.

Chicago RTA’s approach to participating in the Gateway TIS can be used as an example of how transit can play a significant role in regional information systems. Its structured development of a regional transit ITS plan ensures that comprehensive TTI is provided to the public in the future.

**7.5 EUROPE’S TRANSPORT INTERMODALITY DATA SHARING AND EXCHANGE NETWORK**

Europe’s TRansport Intermodality Data sharing and Exchange NeTwork (TRIDENT) project addresses the issue of standards for travel data. While this project is not specifically related to providing regional or community-based traveler information, it represents an important step in integrating disparate travel data and traveler information systems in a region. The goal of TRIDENT, which was funded in part by the European Union Information Society Technologies Framework, was to support multimodal traveler services by establishing common and reusable mechanisms that enable sharing and exchanging data among transport operators

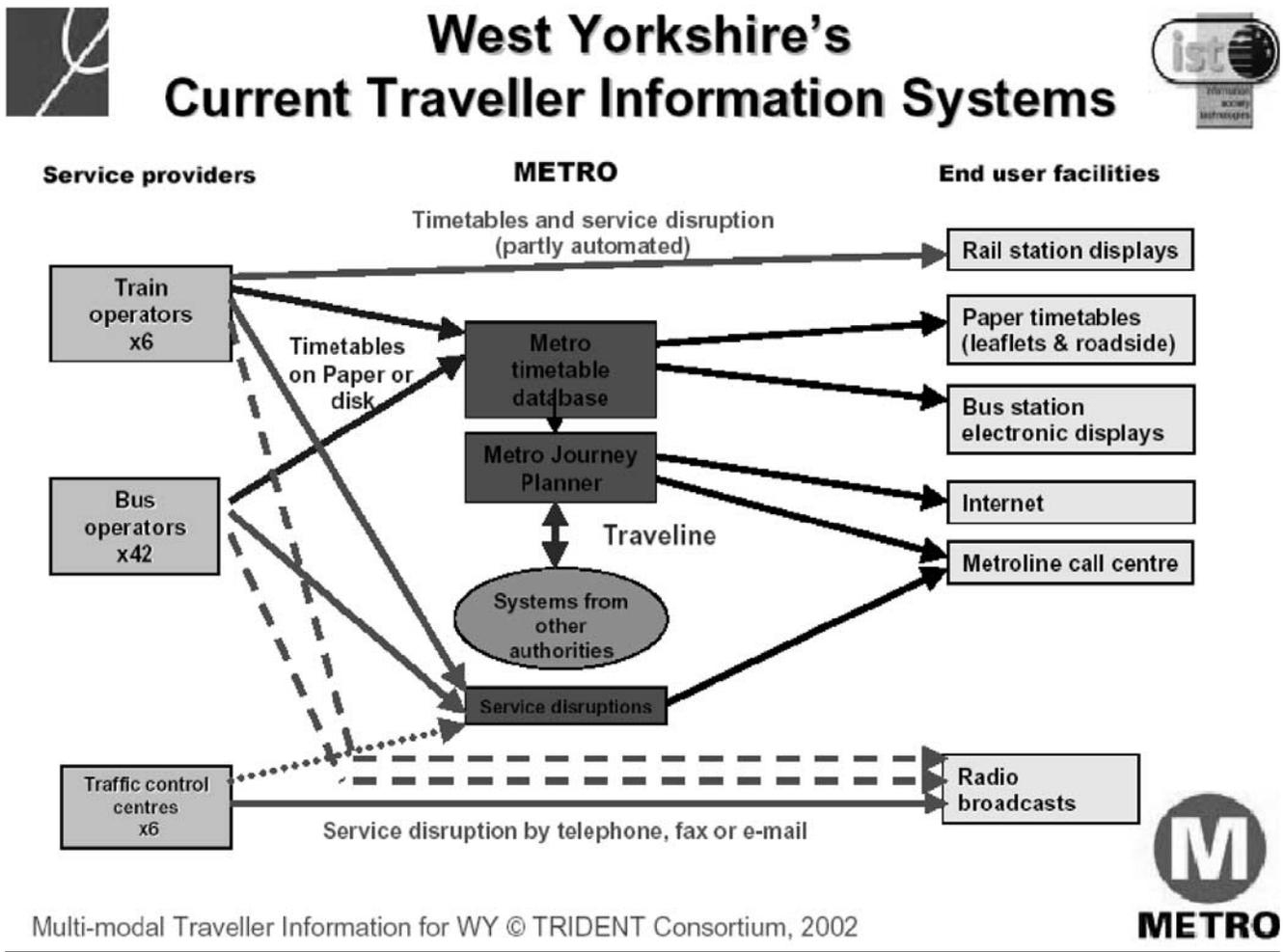


Figure 84. West Yorkshire’s current traveler information systems (13).

(i.e., content owners) of different modes (e.g., bus, light rail, subway, commuter rail, and highway) as well as ISPs. TRIDENT investigated and proposed solutions for the organizational and strategic issues that often hinder travel intermodality. This 30-month project ended in 2002 and tested specifications at four sites: Flanders, Belgium; Paris, France; Rome, Italy; and West Yorkshire, United Kingdom (10).

The West Yorkshire test best illustrates the benefits of TRIDENT and shows how an integrated traveler information system using TRIDENT specifications could become a key component of regional or community information systems: (11)

Metro is the public body responsible for coordinating public transport in West Yorkshire. It has a key role in providing passenger information in a range of formats, including via a call centre. The information is obtained from a variety of sources including private bus and rail operators.

In West Yorkshire, there are 6 train operators, 42 bus operators, and 6 traffic control centers. Prior to TRIDENT, traveler information was collected and disseminated as shown in Figure 84 (12):

In West Yorkshire the TRIDENT specifications will be used to support the introduction of real time multi-modal public transport information using object oriented technologies. In particular it will be used to provide integrated real time information for bus-rail links in the Denby Dale area linking real time bus information with similar information for trains. Information on delays and cancellations from train operators will be shared with Metro and combined with real time bus information held by Metro's own systems. This will form the basis of a real time enquiry system capable of providing information for multi-modal journeys involving both bus and train.

Real time information for both buses and trains will be displayed on a single screen at locations such as Denby Dale and made available to the public initially via Metro's telephone enquiry line. The availability of multi-modal real time information will allow the passenger to make a more informed travel choice especially on occasions where there are disruptions to the service. It is anticipated that the system will be extended to cover West Yorkshire in the future with other retail channels being introduced.

After the full implementation of TRIDENT, traveler information in West Yorkshire will be collected, processed, and disseminated as shown in Figure 85.

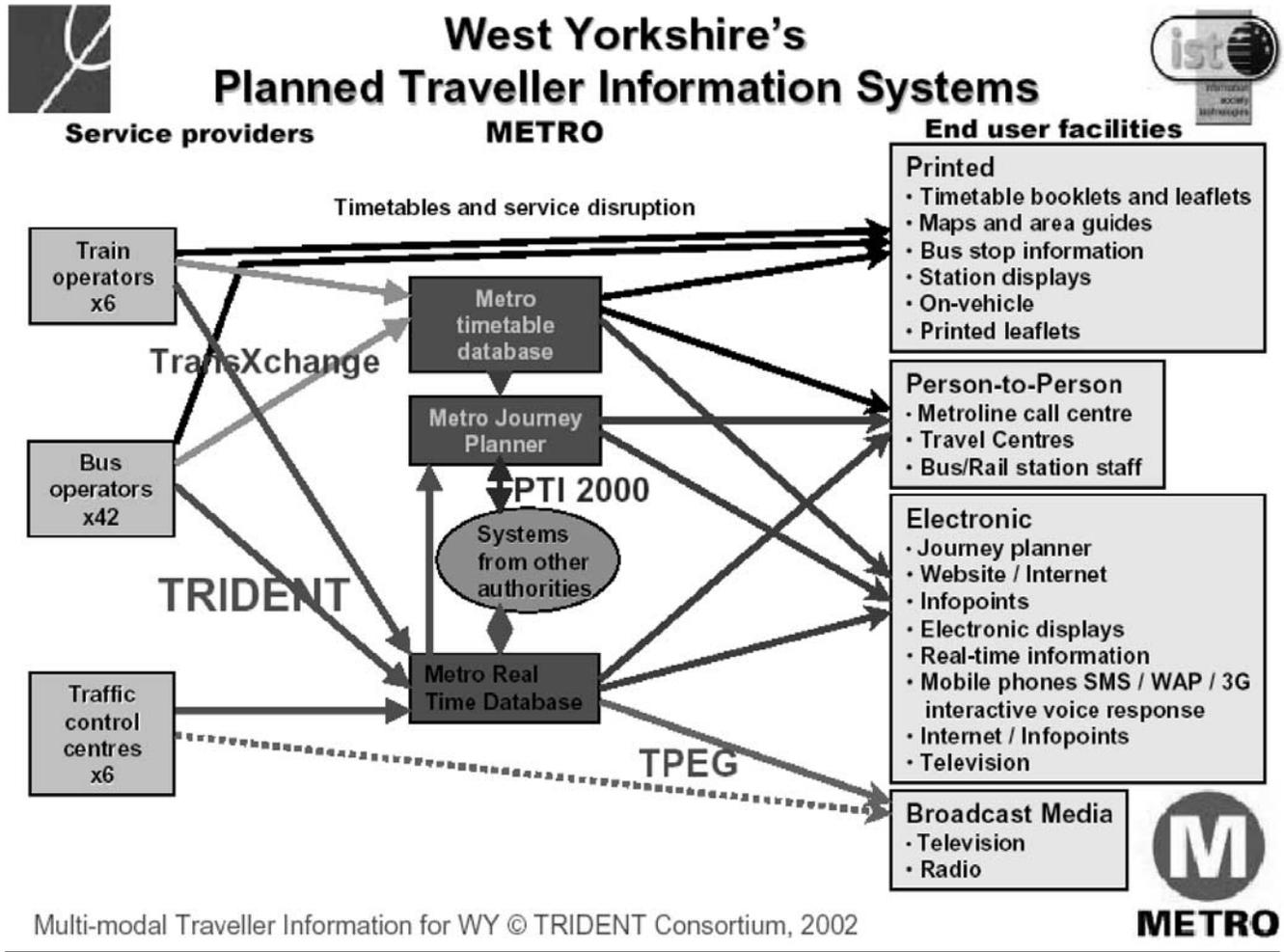


Figure 85. West Yorkshire planned traveler information systems (14).

## 7.6 REFERENCES AND ENDNOTES FOR SECTION 7

1. On July 21, 2000, the Federal Communications Commission assigned 511 as the nationwide telephone number for traveler information. 511 is being deployed around the country by state and local agencies to provide statewide and regional traveler information. While the primary focus of 511 deployment has been on providing traffic conditions, transit information has been provided by many of the current and planned 511 deployments. The majority of the U.S. population will have access to a 511 system by 2005.
  2. Radin, S., B. Sen, and J. Lappin. *Advanced Traveler Information Service (ATIS): Private Sector Perceptions and Public Sector Activities*, Volpe National Transportation Systems Center, Cambridge, MA; 2000.
  3. [www.wiltshire.gov.uk/transport/html/travelwise.html](http://www.wiltshire.gov.uk/transport/html/travelwise.html).
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  8. Wilson Consulting, TranSmart Technologies, Inc., Unisource Network Services, Inc. and Multisystems, Inc. "Regional Transportation Authority Regional Transit ITS Plan Project," Final Report, Executive Summary, prepared for the Chicago RTA; September 6, 2001; pp. 7 and 9.
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  10. [www.ertico.com/activiti/projects/trident/goal.htm](http://www.ertico.com/activiti/projects/trident/goal.htm).
  11. Danflous, D., K. Van Hemelrijck, F. Nussio, C. Duquesne, M. Eden, and P. Kompfner. *Site Validation Plans*, Project IST-1999-10076, Deliverable D4.1, Work Package 4; April 10, 2002; p. 81.
  12. Ibid, p. 85.
  13. Carr, J. "Multi-modal Traveller Information Services for West Yorkshire," presentation for the TRIDENT User Forum, June 27, 2002, London, UK.
  14. Ibid.
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