

Another Step Toward a Nationally Integrated Traveler Information System

by R. Dale Thompson

Just about everywhere you look these days, one can find some form of traveler information. In metropolitan areas, national parks, rural areas, and along interstate corridors, traveler information is provided to the traveling public.

In some instances, the public sector is providing the information, and in others, the private sector is taking the lead. In many cases, it is a partnership of the two.

One thing is certain, traveler information is important to both the transportation community and the traveling public. To the traffic operations manager, traveler information means the roadway will be safer. To the traveling public, it will let them know in advance what to expect and will allow them to adjust their trip accordingly.

What Is Traveler Information?

In its simplest form, traveler information is any information provided to assist travelers in getting from point A to point B more safely and easily. Traveler information started decades ago in the form of simple traffic and weather alerts over the radio. Today, traveler information has matured into the use of more advanced systems that use varying methods to collect and disseminate the information.

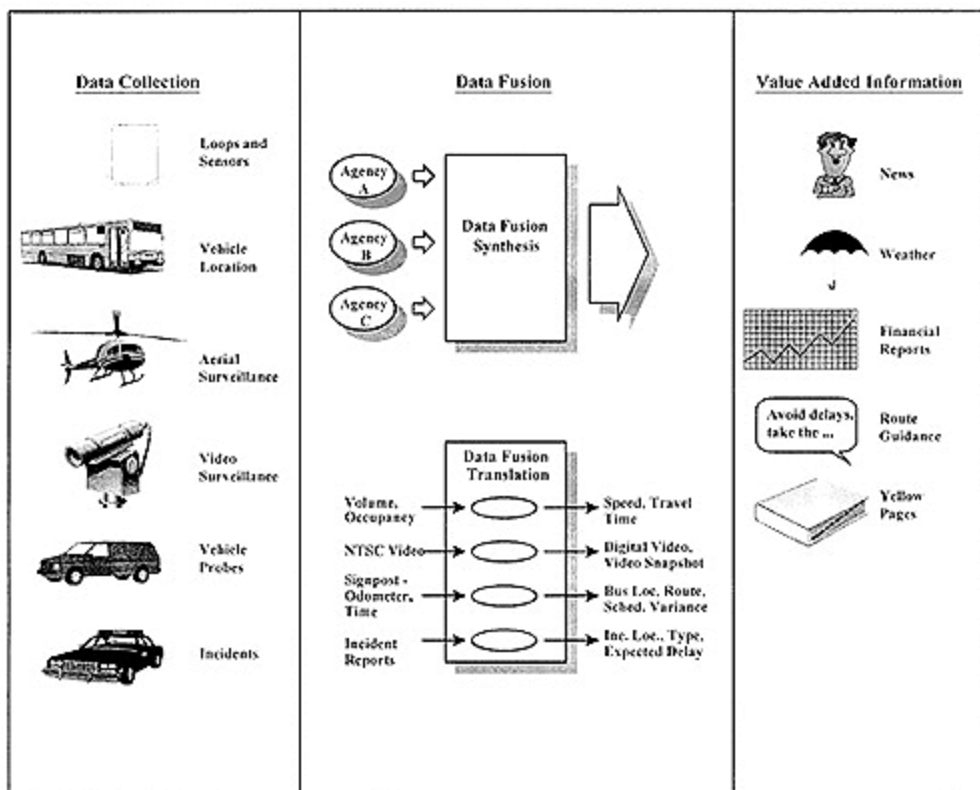


Figure 1 - Example of a traveler information system business model.

Traveler information systems currently vary in level of sophistication, depending on the traffic surveillance and data collection infrastructure put in place by the public and private sectors. Metropolitan areas generally have taken the lead in this area, but many rural tourism areas have built strong partnerships and made significant investments in traveler information as well. An important point is that when the smaller individual systems are integrated within the overall transportation network, a more powerful transportation service is provided that can significantly affect traveler mobility and safety.

A traveler information system may have any one or more of the typical dissemination devices listed below as well as others not listed:

- Cable television.
- Commercial radio.
- Dynamic message signs.

- Radio traveler information reports, such as highway advisory radio.
- Dedicated telephone traveler information systems.
- Kiosks.
- Internet.
- Hand-held devices.
- In-vehicle devices.

Typical information collected and disseminated to travelers may include, but is not limited to:

- Traffic conditions.
- Roadway conditions.
- Incident information.
- Work-zone information.
- Emergency management information.
- Real-time transit information.
- Weather conditions.
- Transit schedules and routes.
- Real-time traffic information.
- Local area information.
- Tourist area information.
- Alternate route information.
- Employee ride-share information.
- Yellow pages information (hotels, restaurants, local businesses, private transportation services, other public and private services, local information, points of interest, maps, and directions, etc.).
- Tourist attractions and park information.

To the traveler, even the smallest amount of information is valuable. Just an awareness of what to expect and a description of the congestion ahead provides the traveling public with peace of mind and the perception of a safer, more secure trip.

Traveler information comes in many different forms and can be disseminated in many different ways. There is no “cookie-cutter” approach to providing traveler information. Typically, the data is collected, sent to a transportation management center, and processed by computer for distribution to public agencies, information service providers, and the traveling public. Figure 1 is an example of one business model.

Why the Rapid Growth in Traveler Information?

Asking this question is like asking why people are so interested in the weather. Weather information serves more than people’s trivial interests. Accurate and timely information about local and national weather conditions helps people avoid inconveniences and problems — for example, by letting people know when it’s appropriate to take an umbrella or when to take shelter in a major storm. And accurate and timely traveler information also helps people avoid inconveniences and problems — for example, by letting people know when they should depart for work a few minutes earlier than normal because of traffic congestion or when to avoid a particular route all together because a crash has closed all lanes. A requirement for timely information means that it must be available 24 hours a day like the cable television Weather Channel. Technological advances make weather prediction more accurate than ever before, and similarly, they make the monitoring and disseminating of traveler information more feasible than ever before. In addition, weather information is an important component of traveler information.

There are very important benefits that come from having good weather information and good traveler information. Safety is the principal benefit, but other benefits include improved traveler mobility and greater economic productivity.

In the not-so-distant future, many transportation experts forecast the development of a national traveler information network that will provide widespread, real-time information on the entire transportation network, including transit services, highway conditions, dynamic in-vehicle navigation, yellow pages information, and reservation scheduling.

Today, however, we are in that difficult period of transition that accompanies the application of advanced technologies in emerging markets. We are seeing some agencies invest heavily in the infrastructure necessary to gather significant amounts of information, and other agencies are focusing on more traditional priorities to meet their transportation needs. It is becoming clear that the widespread deployment of advanced traveler information systems is not happening as quickly as many transportation stakeholders would like to see.

Although more and more transportation professionals and decision-makers are becoming aware of the benefits of Intelligent Transportation Systems (ITS) that include advanced traveler information systems, the widespread deployment that was expected by both the public and private sectors has not yet occurred. The reasons for this include political, institutional, and financial barriers.

The private sector still sees risk in the traveler information market. Without a widespread public infrastructure in place to feed consumer products, private investors are wary.

In addition, many public sector transportation professionals interested in deploying advanced traveler information systems find themselves competing with traditional construction and maintenance projects for necessary resources.

What's the DOT Role and Vision?

A primary role of the National ITS Program is to facilitate the deployment and integration of ITS technologies to improve safety, efficiency, and mobility on our nation's roadways. Congress and the U.S. Department of Transportation (DOT) plan to expedite the integrated deployment of ITS throughout the country by providing a National ITS Architecture and standards, technical assistance, and an integration program. We are well on our way.

In 1992, DOT and the Intelligent Transportation Society of America (ITS America) published complementary ITS visions and strategic plans. In March 1995, the two organizations jointly published the *National ITS Program Plan*, written cooperatively to guide the development and deployment of ITS services. The plan provided the foundation for DOT's efforts to develop "road maps," which began in mid-1995. These road maps mark milestones and critical paths for achieving key program objectives, including objectives related to traveler information. DOT also initiated 83 operational tests, many of which have been completed, to demonstrate the viability of first-generation ITS technologies and services.¹

In June 1996, the United States became the first country to develop a National ITS Architecture. This was the result of an unprecedented three-year effort on behalf of DOT by a combined Lockheed Martin and Rockwell International team that represented the public sector, private sector, and academia. The team and other stakeholders who participated in more than 50 meetings, briefings, and workshops produced a flexible and expandable framework for the development and deployment of ITS.² Instead of a single design, the architecture provides an inclusive setting within which different designs can be implemented and yet can operate compatibly. The architecture identifies how existing infrastructure can accommodate ITS additions and technological evolution. It also provides a framework for the development of national standards to ensure interoperability of conforming products from competing vendors.¹

Also in 1996, DOT created the model deployment initiative to showcase the benefits and cost-effectiveness of ITS services integrated along the lines defined by the National ITS Architecture. From June to October 1998, four sites — Seattle, San Antonio, Phoenix, and the New York City tri-state area — showcased the benefits of the metropolitan ITS infrastructure, again including a traveler information component.¹



Although it will take years to complete DOT's goals, several things can be done in the short term.

In 1997, the National ITS Program solicited for two field operational tests in rural areas: a Tourism and Traveler Information System project and a Roadway Weather Information System project. With almost 30 proposals submitted, DOT quickly recognized the wide spectrum of traveler information systems ripe for deployment across the country. A vision of a National Traveler Information System soon emerged, and minds went to work to develop a feasible way to make it happen.

The National Traffic and Road Closure Information System allows the traveler to click on a state to see a listing of publicly available traveler information sources.

Traveler information was, in fact, widespread — from metropolitan areas and interstate corridors to national parks and rural tourist areas. Many local systems collect similar traveler information elements, and they use similar mechanisms for dissemination. Nevertheless, each system focuses on local or regional concerns, and few, if any, consider issues related to a national integration of systems. DOT quickly found a low-cost mechanism that was almost universally available and could potentially expedite the dissemination of integrated traveler information on a national scale — the Internet.

Traveler information in various forms is provided free on the Internet by public transportation and tourism agencies and by some private entities as well. DOT's vision is simple: To provide travelers with a single location to access all public traveler information from across the country. Thus, the National Traffic and Road Closure Information System

(<http://www.fhwa.dot.gov/trafficinfo>) was created. The system is basically a Web site with “hot links” to virtually every publicly available traveler information system throughout the United States. The purpose of the Web site is to consolidate existing information about public road conditions and to provide a single “entry point” for the traveling public, commercial vehicle operators, roadway operators, maintenance personnel, decision-makers, private industry, and other transportation stakeholders.

How Does It Work?

The information at this Web site primarily focuses on existing construction, maintenance, and road closure information currently available to the traveling public. Although DOT has consolidated the information, the public and private organizations providing the information are responsible for its accuracy and updates.

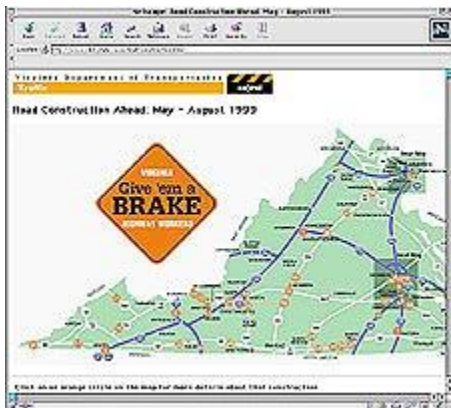
When the user of this site clicks on the name of a particular state, the system provides a list of publicly available Web sites. The user may then click on a site and access information about the traffic and weather conditions, road closures, road construction and maintenance activities, and other useful information in that state.

At first observation, it is easy to see the disparity in the types and levels of information provided, ranging from practically none at all to a significant amount. Some sites include accurate, easily accessible, and readable color-coded maps and displays, and others only supply the data in raw form or text only.

State and local agencies collect, display, and maintain their own traveler information. As can be seen on the National Traffic and Road Closure Information System, each agency provides varying information in a different way. Local users may benefit from this disconnected distribution of information, but regional and multistate travelers do not have access to a single “one-stop shopping” public source of traveler information. One way to resolve this problem is for state and local agencies to standardize both the data they collect and the way they display the information. DOT can take the lead to facilitate discussions toward this end, but it will take ITS America, the American Association of State Highway and Transportation Officials (AASHTO), and other public and private organizations to commit to solving this national issue.



Clicking on North Dakota and then North Dakota Roadway and Weather Information provides the traveler with important information on seasonal travel conditions.



Clicking on Virginia and then Virginia Road Construction provides public and private sector data, including metropolitan and rural traffic and weather conditions, toll facility information, and real-time camera images. Click on Construction to see major highway improvement projects across the state.

This brings us again to the purpose of the National Traffic and Road Closure Information System. To achieve the vision of a nationally integrated, interoperable traveler information system capable of sharing data across jurisdictions and modes, critical issues must be addressed — issues such as consistency in the types of data collected, data format, message standards, and data exchange protocols to name a few. Other issues — such as standardized display information, color-coding, and icons — are significant in the effort to provide consistent information in a clearly understood and exchangeable format.

What Are the Next Steps?

DOT does not intend to operate and maintain such a system for the long term. The federal role is to be the facilitator to help identify and resolve the critical issues seen as barriers to implementation. With stakeholder input and direction, DOT can lead important architecture and standards activities and can help resolve important data-sharing and integration issues.

The National Traffic and Road Closure Information System is the mechanism that DOT will use to demonstrate the state of the practice of traveler information data collection and dissemination in the public sector. The ultimate National Traveler Information System of the future will provide standardized data in a consistent format across the country with each locality providing similar data in a consistent format. Many issues remain unresolved,

and this is only one of many options to obtain this vision. To date, public and private sectors have been unable to identify clearly what the ultimate National Traveler Information System of the future will look like. It will take all of us working together to make this a reality. DOT's National Traffic and Road Closure Information System Web site is simply another step DOT has taken to build awareness and commitment to resolve this important issue in the development of an integrated national transportation system.

DOT Solicits Input

The National Traffic and Road Closure Information System demonstrates the

