

# ENTERPRISE Transportation Pooled Fund Study TPF-5 (231)



## The Next Era of Traveler Information

FINAL REPORT

Prepared by:



March 2013

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16. Abstract Over the last decade, 511 telephone and web services have been deployed in many states and provinces. Some agencies have already deployed 'second-generation' 511 systems with the intent of adding functionality, improving content or reducing operating costs. Agencies are also expanding their dissemination of real-time traveler information using push services like Constant Contact and social media tools like Twitter. Many agencies have also developed partnerships to reduce operating costs through sponsorship or outsourcing. It is increasingly challenging to plan, evaluate, operate and enhance real-time traveler information services because of limited resources, overwhelming information and rapidly changing dynamics.  ENTERPRISE sponsored this project to help agencies understand how real-time traveler information technology and use is changing and how the changes are impacted by current and emerging trends. Emphasis was placed on sharing lessons learned by agencies that have experience related to current trends. The areas of interest that were explored during this project included dissemination tools, data management, cost management, customer needs and performance targets.			
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## **ENTERPRISE Members**

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# Contents

- 1. Introduction..... 3
- 2. Key Findings..... 4
- 3. Survey Highlights ..... 6
  - 3.1. Dissemination ..... 6
  - 3.2. Data and Information..... 7
  - 3.3. Operational Practices..... 8
- 4. Webinar Highlights ..... 9
  - 4.1. Webinar 1 – Dissemination Tools ..... 10
  - 4.2. Webinar 2 – Data and Cost Management..... 11
  - 4.3. Webinar 3 – Customer Needs ..... 13
  - 4.4. Webinar 4 – Performance Management ..... 15
- 5. Framework ..... 17
- 6. Conclusion ..... 18
- 7. Web Site References ..... 19

# 1. Introduction

Over the last decade, 511 telephone and web services have been deployed in many states and provinces. Some agencies have already deployed 'second-generation' 511 systems with the intent of adding functionality, improving content or reducing operating costs. Agencies are also expanding their dissemination of real-time traveler information using push services like Constant Contact and social media tools like Twitter. Many agencies have also developed partnerships to reduce operating costs through sponsorship or outsourcing. It is increasingly challenging to plan, evaluate, operate and enhance real-time traveler information services because of limited resources, overwhelming information and rapidly changing dynamics.

The [ENTERPRISE<sup>1</sup>](#) Transportation Pooled Fund sponsored this project – [Next Era of Traveler Information<sup>2</sup>](#) – to help agencies understand how real-time traveler information technology and use is changing and how the changes are impacted by current and emerging trends. Emphasis was placed on sharing lessons learned by agencies that have experience related to current trends. The areas of interest that were explored during this project are described as follows.

- *Dissemination tools.* The project facilitated an exchange of experiences with push information services and social media to help agencies understand new options for delivering information without relying on incoming phone calls. In addition to describing the tools being used, agencies described their philosophy and goals for traveler information to provide a context for how their dissemination tools support them.
- *Data management.* Managing the availability, variety and formatting of a growing number of data sources creates a complex environment for delivering traveler information. The project explored data requirements outlined in the Code of Federal Regulations, Title 23: Highways, Part 511—Real-Time System Management Information Program ([23 CFR 511<sup>3</sup>](#)) and the data format specifications being developed by USDOT to support the exchange of information from highway and transit monitoring systems.
- *Cost management.* Managing traveler information program costs continues to be challenging, particularly with increasing demands for information to be timely, accurate and delivered in a variety of formats. The project supported a peer exchange of alternative funding approaches, specifically sponsorships, to manage and optimize the costs of operating traveler information services.
- *Customer needs.* Understanding and meeting customer needs in an era when information is a premium commodity is especially problematic in government culture where market research is still rarely used to understand customer needs. The project facilitated a discussion of how agency approaches to understanding customer needs and presented findings from a nation-wide study conducted by the National Cooperative Highway Research Program to understand what information and services travelers find most useful.
- *Performance targets.* A key feature of the 2012 legislation, [Moving Ahead for Progress in the 21<sup>st</sup> Century<sup>4</sup>](#) (MAP-21), is the establishment of a performance- and outcome-based program that will encourage states to invest resources in projects that will make progress toward national goals. The project facilitated an exchange of information about states'

approaches to establishing practical performance measures and targets for traveler information programs, particularly as they relate to meeting requirements in 23 CFR 511.

This document highlights key findings related to these areas of interest and the project overall. It also presents the results of an ENTERPRISE survey to better understand trends and the states' current practices in each area of interest. Information from the survey was then used to develop a series of webinars that further explored trends and presented lessons learned from practitioners in each area. The survey information was also used to provide additional resources for further exploration following each webinar. Finally, a high-level planning framework was developed for states to further consider and develop, as desired, an action plan in response to the information presented throughout the project. Portions of the framework were included, along with examples, in the summaries that were prepared for each webinar. The complete framework is presented in this document for further reference and use by the states.

This project and the information it presented was made available to agencies beyond the ENTERPRISE membership. The project was also supported by the Federal Highway Administration (FHWA) [Real-Time System Management Information Program](#)<sup>5</sup> and the American Association of State Highway and Transportation Officials (AASHTO) during their preparations to reactivate the national [511 Coalition](#)<sup>6</sup>. The 511 Coalition will hold its first meeting since 2010 in Phoenix, Arizona on April 11, 2013.

## 2. Key Findings

As the project survey, webinars and research were conducted, several key findings stood out in relation to trends and what agencies may see in the next era of traveler information. Table 1 briefly highlights these findings and where further references are presented in the remainder of the document.

**Table 1 Key Findings and Further References**

Key Findings	Further Reference
<p>In recent years, <b>social media tools (e.g., Twitter, Constant Contact) have emerged and many agencies are now using them to share information with travelers</b> as well. These tools have the added benefit of dynamic two-way conversations that offer agencies immediate public feedback. As agencies expand their dissemination tools, adequate staffing to maintain information must also be carefully considered.</p>	<p><a href="#">3.1 Dissemination</a> and <a href="#">4.1. Webinar 1 – Dissemination Tools</a></p>
<p><b>Traveler information appears to be expanding slowly to local roads and transit services.</b> Only 36% of the ENTERPRISE survey respondents provide information on local roadways and less than 10% (only two respondents) provide public transportation information. With the transit response, it is important to note that most transit services are operated separately from the state department of transportation. This may contribute to the low number of survey responses indicating that transit information is included in overall traveler information programs.</p>	<p><a href="#">3.2 Data and Information</a></p>

Key Findings	Further Reference
<p>Most agencies rely on their staff and network detection (e.g. inductive loops, video) for the data needed to provide information to travelers. However, 18% of the ENTERPRISE survey respondents indicated they are using third party data as a key source for their traveler information programs. <b>The use of third party data has grown from previous years and will likely continue to grow</b> in coming years as the demand for traveler information beyond agency networks also grows.</p>	<p><a href="#">3.2 Data and Information</a></p>
<p><b>Despite the increasing number of commercially available services, many transportation agencies still foresee themselves as the primary source of traveler information.</b> When asked to describe the operational vision for their program and more than half of the survey respondents envision their agency as a premier provider of real-time traveler information. Fewer than 10% of the agencies see themselves as becoming focused on simply providing data for other organizations to disseminate traveler information. This could be recognition of the growth in and availability of third party data or simply a reflection of agencies' philosophy to use traveler information programs as a key service to manage relationships with the public they serve.</p>	<p><a href="#">3.3. Operational Practices</a></p>
<p><b>There are now early success stories where sponsorship has reduced or eliminated agency costs, in addition to many where agencies have faced significant challenges.</b> The marketability of traveler information is still evolving and will likely continue to change as tools like social media also evolve.</p>	<p><a href="#">4.2. Webinar 2 – Data and Cost Management</a></p>
<p><b>Performance measures are recognized as being important</b> to understanding how well a program and its services may be performing in relation to its goals and vision. <b>However, the practice of performance management is still relatively new for most agencies</b> and only 39% of the ENTERPRISE survey respondents indicated having performance targets or measures established for their real-time traveler information programs specifically.</p>	<p><a href="#">3.3. Operational Practices</a> and <a href="#">4.4. Webinar 4 – Performance Management</a></p>
<p><b>Agencies' current practices in monitoring the performance of traveler information programs reflect a variety of approaches</b> that vary in the complexity of their approach and the value they offer in making program decisions.</p>	<p><a href="#">4.4. Webinar 4 – Performance Management</a></p>

### 3. Survey Highlights

To better understand agencies' current traveler information practices in each of the areas of interest for this project, ENTERPRISE administered a survey in March-April 2012. The survey request was distributed to the states and program contacts available through the 511 Coalition contacts and as provided by ENTERPRISE members. Twenty-six states and one regional planning organization responded. The survey questions were presented within three main categories. In each survey category, agencies were asked 2-5 questions about their current practice. Table 2 illustrates how the survey categories aligned with the areas of interest for this project, and following that is a summary of the survey results in each category.

**Table 2 Survey Categories and Project Areas of Interest**

Survey Category	Project Area of Interest
Dissemination	Dissemination tools
Data and information	Data management
Operational practices	Cost management
	Customer needs and wants
	Performance targets

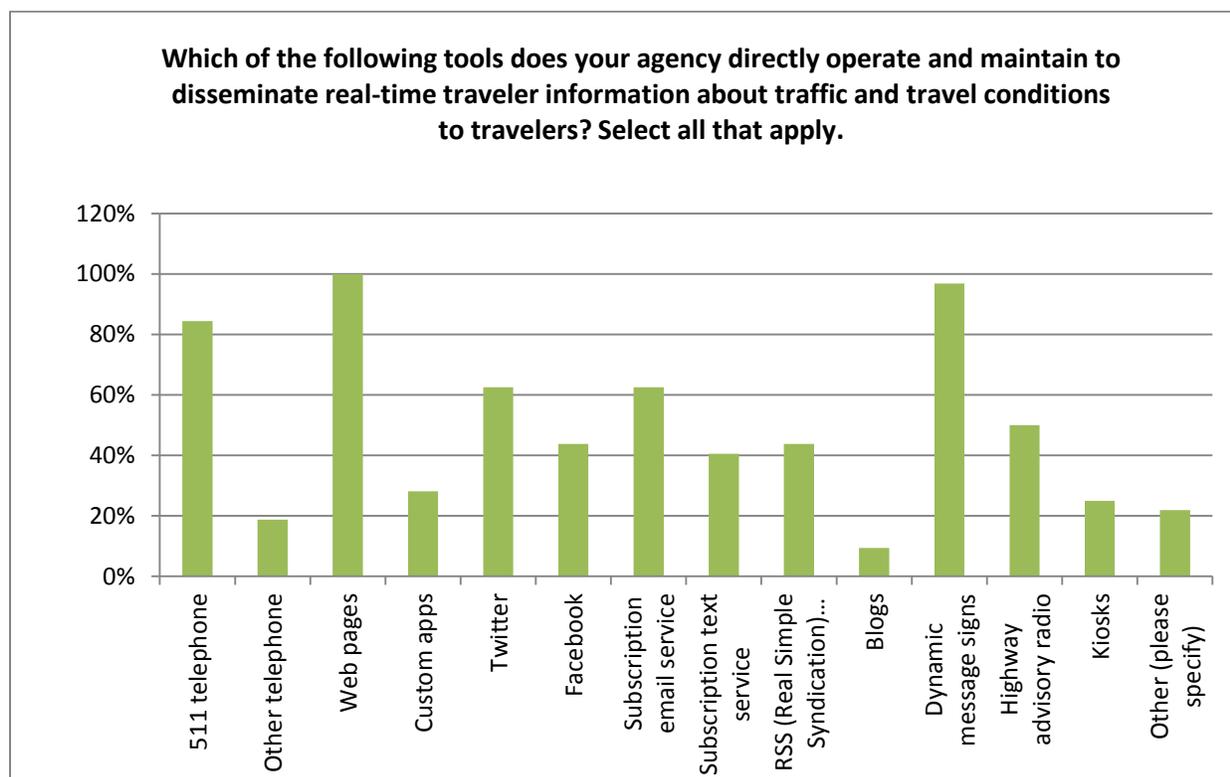
#### 3.1. Dissemination

Nearly every state has some form of real-time traveler information program. Since the July 2000 designation of 511 as a nationwide telephone number for travel related information, most states and many large metropolitan areas have implemented some form of this telephone service. It has also been common for agencies to develop companion web pages as another dissemination tool. In recent years, social media tools (e.g., Twitter, Facebook) have emerged and many agencies are now using them to share information with travelers as well. For a [broader definition of social media](#)<sup>7</sup>, please visit Wikipedia.

For the past three years, AASHTO's [Subcommittee on Transportation Communications](#)<sup>8</sup> has tracked department of transportation social media use for a variety of purposes. In their third annual [State DOT Social Media Survey](#)<sup>9</sup>, 37 of the responding states reported using [Twitter](#)<sup>10</sup> to distribute a variety of information including traffic, weather and project information. [Facebook](#)<sup>11</sup> was also reported as being used by 32 of the responding states but more for feature stories vs. real-time information. The departments also reported using [LinkedIn](#)<sup>12</sup>, [Flickr](#)<sup>13</sup>, blogs, online videos ([YouTube](#)<sup>14</sup>), podcasts, [Pinterest](#)<sup>15</sup>, [Storify](#)<sup>16</sup> and mobile media. This survey also presents useful information about agencies' approaches to and concerns about adequate staffing to maintain reliable information across a growing number of outreach tools.

The ENTERPRISE survey conducted for this project asked a series of questions to understand what tools agencies are using today to – directly and indirectly – disseminate real-time traveler information specifically. The results are illustrated in Figure 1.

Figure 1 Agency Use of Tools to Deliver Information Directly to Travelers



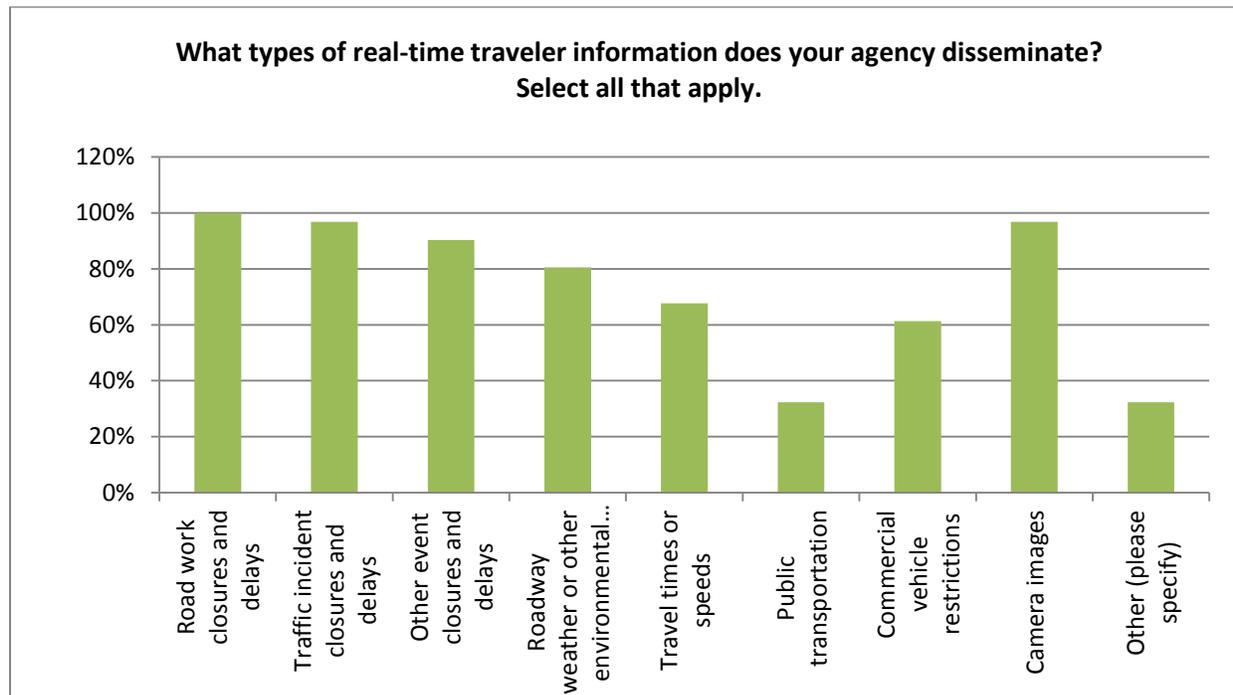
Web pages, dynamic message signs and 511 were still the most prevalent tools used to deliver information directly to travelers pre-trip and en-route. Twitter and subscription email service are close behind with 63% of respondents using them to deliver information. Many agencies are also still using other, indirect avenues to deliver information. News media is still used by nearly all the agencies and third party data providers are used by 67% of the agencies to reach travelers. More than half of the agencies use web services (typically an XML data feed) to deliver data and information to other sources where information is then resent on to travelers. Although it was not specifically asked in this survey, it would be useful to know which tools travelers most prefer and how those preferences break down across ages, socioeconomic status and rural/urban geography.

### 3.2. Data and Information

Real-time traveler information about traffic and travel conditions is available from a variety of sources. Data may consist of speed, volume and occupancy from detectors or road surface temperatures from sensors. The data may then be combined and fashioned into real-time traveler information. The content, accuracy and timeliness of both data and information can also vary widely from one source to another or from one region to another. The data and information requirements for state traveler information programs in 23 CFR 511 specify, “The real-time information program shall include traffic and travel condition information for, as a minimum, all the Interstate highways operated by the state.” Traffic and travel conditions are then further defined as impacts that travelers experience, including road or lane closures, roadway weather or other environmental conditions; and, travel times or speeds in metropolitan areas that experience recurring congestion.

Agencies were asked in the ENTERPRISE survey to describe the data they use and the information they disseminate for traveler information. All of the responding agencies currently provide road work closures and delays, as well as traffic incident closures and delays, and nearly all of them provide camera images – even though this is not specified in 23 CFR 511. All of the agencies that responded also provide this information for state and interstate roadways. Only 36% provide information on local roadways and less than 10% (only two respondents) provide public transportation information. With the transit response, it is important to note that most transit services are operated separately from the state department of transportation. This may contribute to the low number of survey responses indicating that transit information is included in overall traveler information programs.

**Figure 2 Traveler Information Provided by Agencies**



Most agencies are relying on their staff and network detection (e.g. inductive loops, video) for the data needed to provide information to travelers. However, 18% indicated they are using third party data as a key source for their traveler information programs. The use of third party data has grown from previous years and will likely continue to grow in coming years as the demand for traveler information beyond agency networks also grows.

### 3.3. Operational Practices

Agency budgets are regularly scrutinized and often reduced which can make real-time traveler information programs vulnerable. Agencies also hear about new and different approaches their peers are using that may, or may not, necessarily work in their region or within the context of their program philosophy. For the purpose of this ENTERPRISE-sponsored survey, operational practices were defined as those related to planning, operating, evaluating and maintaining real-time traveler information programs. Agencies were asked about their current practice in these areas.

With the advent of navigation systems providing traffic information and customized traffic apps being developed, there may be some speculation about agencies' future role in providing traveler information. Despite the increasing number of commercially available services, many transportation agencies still foresee themselves as the primary source of traveler information. Agencies were asked to describe the operational vision for their program and more than half still envision their agency as a premier provider of real-time traveler information. Another 36% see their programs as providing some level of basic real-time information. Fewer than 10% envision their agency becoming focused on simply providing data for other organizations to disseminate traveler information. This could be recognition of the growth in and availability of third party data or simply a reflection of agencies' philosophy to use traveler information programs as a key service to manage relationships with the public they serve.

Many of the program goals described by the survey respondents are directly related to meeting requirements in 23 CFR 511. Other goals include reducing or eliminating service fees such as those associated with processing 511 telephone calls, while other goals are related to enhancing or adding new services, particularly social media, to disseminate information. Very few of the agencies noted formal business or strategic plans associated with their programs.

It is important for an agency to understand their vision and goals for traveler information as they are routinely presented with new tools for disseminating information, new options for receiving data or new approaches to funding. It is also important to understand how well a program and its services may be performing in relation to its goals and vision. The practice of performance management is still relatively new for most agencies and only 39% of the survey respondents indicated having performance targets or measures established for their real-time traveler information programs specifically. Many of the targets and measures cited were taken directly from 23 CFR 511 or related to usage (e.g. web page hits, 511 call volumes, Twitter followers). It was not clear from the survey responses how the agencies use this performance information in their management processes related to budgeting, adding or discontinuing services and so forth.

A key aspect of performance is how well customer needs and wants are met. Real-time traveler information is ultimately about the public that agencies serve, so it is also important for them to understand their needs and wants. Agencies were asked to describe their practices related to seeking customer feedback. Only 16% actively seek input from routine customer market research and 9% of the respondents seek no customer feedback at all.

## 4. Webinar Highlights

Leveraging the ENTERPRISE survey information, a series of webinars were scheduled to further explore and allow peer exchange about agencies' current practices in the areas of interest for this project. Table 3 summarizes topics, presenters and schedule for the webinar series.

**Table 3 Webinar Topics, Presenters and Dates**

Trend Area	Presenters	Date
<b>Dissemination tools</b>	Alice Fiman (WSDOT) Virginia Lingham (WisDOT)	Thursday, August 16, 2012
<b>Data and cost management</b>	Bruce Eisenhart (Consystec) Hugh Colton (GDOT)	Thursday, September 13, 2012

Trend Area	Presenters	Date
	Jon Nelson (MoDOT)	
<b>Customer needs and wants</b>	Scott Cowherd (VDOT) Emanuel Robinson (Westat)	Thursday, October 18, 2012
<b>Performance targets</b>	Sreenath Gangula (WSDOT) Mark Kopko (PennDOT)	Thursday, November 15, 2012

ENTERPRISE coordinated these webinars with FHWA and AASHTO as preparations were made to reactivate the national 511 Coalition. In addition to facilitating peer exchanges on these current topics, the webinars allowed FHWA and AASHTO to interact with the states to identify other topics for continued peer exchange and to prepare for a coalition meeting scheduled for April 11, 2013.

#### 4.1. Webinar 1 – Dissemination Tools

Disseminating traveler information has changed dramatically over the past two decades. Agencies used to record messages for limited capacity telephone services with local numbers that were often unknown to travelers from outside the region. The Internet created an opportunity to begin posting information to web pages but there was actually skepticism about how many people would have computers to access the information. Then 511 was released in 2000 and seen as the solution to nationally accessible information by telephone, especially with the growing prevalence of cell phones. Not many agencies could have conceived of social media when they were launching their 511 services only ten years ago, and it is difficult to imagine what additional tools will be available ten years from now.

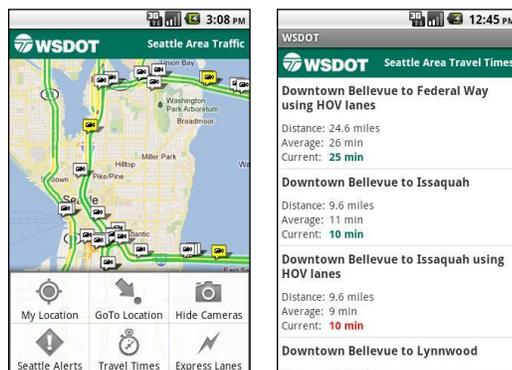
Focusing on push-oriented dissemination tools, ENTERPRISE hosted the first webinar for this project in August 2012 to facilitate a peer exchange on tools being used in Wisconsin and Washington. Virginia Lingham from the **Wisconsin Department of Transportation** presented a brief overview of Wisconsin’s traveler information program, highlighting their **My511wi** dissemination tool. My511wi was launched in 2009 and offers personalized information to over 4,000 travelers. After registering for the service, travelers can identify up to 10 different routes and then receive customized alerts as text messages. They can also receive customized reports when calling 511. After recognizing the caller’s number through caller ID, 511 delivers customized information to the caller. WisDOT also offers additional traveler information through detailed construction project web pages and incident alerts through Twitter.



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Similarly, Alice Fiman from the **Washington State Department of Transportation** shared an overview of their traveler information program and then described **Washington’s Twitter and mobile application** dissemination tools. WSDOT uses a mix of traditional and cutting edge tools, and the agency works year-round to establish credibility as the first and best source of information. WSDOT’s Twitter has over 13,000 followers and the added benefit of two-way conversations that give the department hundreds of eyes and ears on the road. There have been over 215,000 downloads of the department’s mobile application, which is available for both iPhone and Android phones. The app provides statewide traffic cameras, high priority travel alerts, mountain pass reports, ferry schedules and alerts, ferry vessel watch, and northbound Canadian border wait times.



**Alice Fiman**

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[www.wsdot.com/traffic](http://www.wsdot.com/traffic)

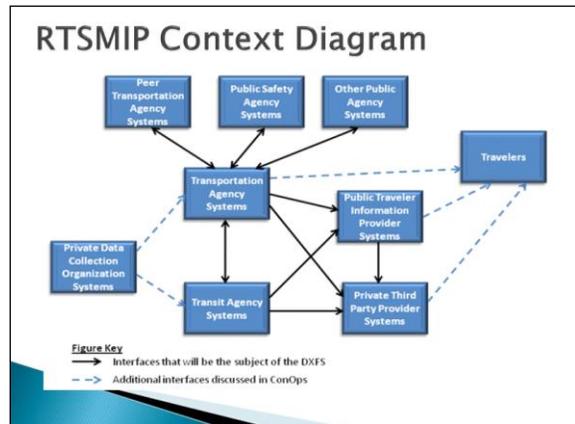
## 4.2. Webinar 2 – Data and Cost Management

Real-time traveler information about traffic and travel conditions is available from a variety of sources. Data used to create such information may consist of vehicle speed, volume and occupancy from roadside detectors or location data from an ever growing source of mobile devices. The content, accuracy and timeliness of both data and information can also vary widely from one source to another and from one region to another.

The data and information requirements for traveler information programs in 23 CFR 511 specify, “The real-time information program shall include traffic and travel condition information for, as a minimum, all the Interstate highways operated by the state.” Traffic and travel conditions are then further defined as impacts that travelers experience, including road or lane closures, roadway weather or other environmental conditions; and, travel times or speeds in metropolitan areas that experience recurring congestion. As deadlines approach for meeting the requirements in 23 CFR 511, states are naturally considering how to best meet them and manage the cost implications to their programs. In these times of fiscal constraint, agency budgets are regularly scrutinized and often reduced which can make traveler information programs vulnerable. Sponsorship continues to be a prominent cost management strategy being explored by many agencies. However, the process of establishing and managing sponsorship is still relatively new and can be challenging in a government setting.

ENTERPRISE hosted a second webinar in September 2012 to further explore states’ current practices in data and cost management for traveler information programs. Cost management – specifically sponsorship – practices in Georgia and Missouri were featured along with an update on USDOT’s effort to define a data exchange format for Real-Time System Management Information Programs.

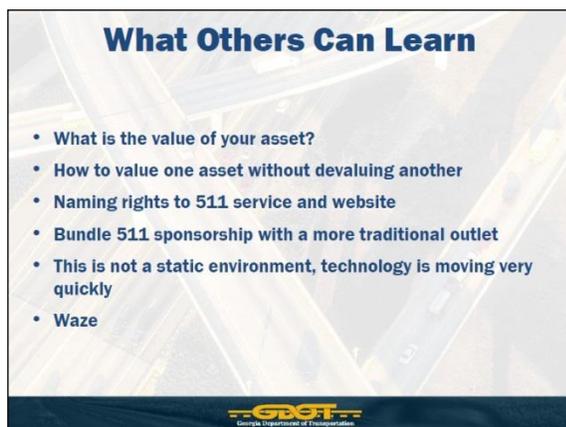
Bruce Eisenhart from **Consystec** explained how SAFETEA-LU Section 1201 required USDOT to develop 23 CFR 511 and establish a data exchange format to ensure that the data provided by highway and transit monitoring systems, including statewide incident reporting systems, can be readily exchanged across jurisdictional boundaries, facilitating nationwide availability of information. Systems engineering is being used to define needs, requirements and design for the data exchange format, which will also be based on existing ITS standards. As illustrated in the adjacent



RTSMIP Context Diagram, data exchange can occur among numerous public and private entities. To support this often complex exchange, implementation guidance will also be developed. The complete data exchange format specification and implementation guidance will be available in early 2013.

**Bruce Eisenhart**

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Meeting data content requirements, supporting the exchange of data among systems and expanding the delivery of traveler information can have significant cost implications. **Georgia Department of Transportation** and **Missouri Department of Transportation** shared their experiences with sponsorship as a cost management strategy. Hugh Colton described GDOT's more established sponsorship experience with an emphasis on lessons learned over the past three years. GDOT's program is owned and operated by a private entity, but a governance board exists to develop policy and ensure accountability. They are using 511 audio messages, signs, mobile applications and websites to offer sponsorship options. Over 800 signs currently have sponsorship acknowledgements and have been the most successful aspect of their effort. Digital couponing is expected to further increase sponsorship opportunities in the mobile environment. For comparison, GDOT secured a five-year sponsorship for its Hero service patrol at \$1.7M per year. When determining the value of traveler information program

assets, GDOT advised agencies to be sensitive to the unintentional devaluation of other program assets such as traditional roadside logo signing.

**Hugh Colton**

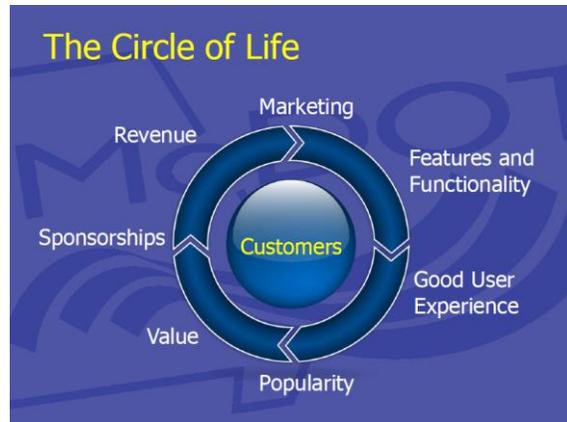
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In contrast, Jon Nelson shared MoDOT’s very recent experience with exploring sponsorship and some of the challenges they have faced. MoDOT issued a request for proposals in 2011 to establish a fully sponsored, statewide 511 service that would enhance their existing traveler information services. They planned to allow sponsorship on signs, web sites, mobile applications and camera images. They anticipated a heavily marketed system that would be fully operated and maintained by a private partner. Numerous challenges have prevented them from launching their services. MoDOT advised agencies to clearly define their procurement process, articulate requirements, establish sponsorship parameters up front, stay flexible with revenue sharing options, and use marketing expertise.

**Jon Nelson**

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**Challenges**

- ◆ Procurement/Consultant Selection
- ◆ System requirements
- ◆ Sponsorship
- ◆ Flexibility
- ◆ Project management
- ◆ Marketing
- ◆ Competition
- ◆ Realistic expectations & goals

The list is accompanied by a 3D Rubik's cube icon on the right side.

**4.3. Webinar 3 – Customer Needs**

Today’s customer has become more sophisticated in their knowledge, need and demand for products and services. Consumer Service Manager.com reports that the [five things today’s customers want](#)<sup>17</sup> are convenience, knowledgeable workforce, speed, consistency, and a great mobile experience. The needs that people have developed as consumers are also influencing their expectations as citizens. Government Technology’s [2012 Year in Review](#)<sup>18</sup>, describes it as “...the year that using social media to reach citizens became business as usual. People expect government to use the communication outlets that they do...”

These trends are also impacting the use of real-time traveler information. Today, there are more ways for travelers to receive information and there is a greater variety of information available. Travelers have greater demands for and expectations of real-time information about traffic and travel conditions, and transportation agencies are facing the challenge to understand and meet the ever-changing needs of their customers. In October 2012, ENTERPRISE hosted its third webinar to further explore agencies’ current practices in seeking customer feedback. Practices in the state of Virginia and a recent national survey conducted through the National Cooperative Highway Research Program were featured.

Scott Cowherd from the **Virginia Department of Transportation** described research that was conducted with Virginia travelers to understand their needs and to develop requirements for the agency’s fourth generation 511 service. The research included a series of qualitative one-on-one interviews that led to quantitative surveys of current and prospective users VDOT discovered the 511 is working in the sense that respondents said they do change their behavior based on traffic information. Respondents also said that VDOT has a responsibility for providing traveler information; however, they were largely unaware

VDOT Page 2  
511 Research-Results

- 511 Works
  - People changed their travel behavior based on information from 511
- Citizens are looking for this information
  - VDOT has a responsibility to provide this information to the traveling public
- Awareness
  - Marketing is needed to let the public that it exist
  - Attribution Banner on the cameras
- Signage
  - More signs
  - VDOT branded
  - Travel to Traffic

of the services currently offered. The research also indicated travelers have a better understanding of “traffic” vs. “travel” information as many associated travel with tourism oriented information. New 511 services were launched in May 2012 with features based on survey results. The updated service includes web and mobile applications, interactive voice response phone service, information displays at welcome centers, Twitter and email alerts, and travel time signs. Mobile apps were the most requested avenue for receiving information and VDOT developed the app with an audio function to enhance traveler safety. Acknowledging customers’ continued use of media as an information source, the department also developed a one view portal for media, emergency responders and other partners. VDOT’s efforts were rewarded in September 2012 when their newly launched 511 services were recognized by Governor Bob McDonnell for using technology as an efficiency driver in government to citizen services.

VDOT VDOT's New 511 Service Key Features

- IVR
  - New voice recognition engine
  - Directional recognition
  - Travel times
- Web/Mobile App
  - Redesigned site
  - Live streaming video (15 frames/sec)
  - Mobile app with live traffic information
  - Travel times
- Video/Operations Data
  - Free video access through web service
  - Includes attribution to VDOT
  - Operations data publicly available
- 511 Highway Signs
  - Sponsorship acknowledgements will be added to 511 signs

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[www.511virginia.org](http://www.511virginia.org)

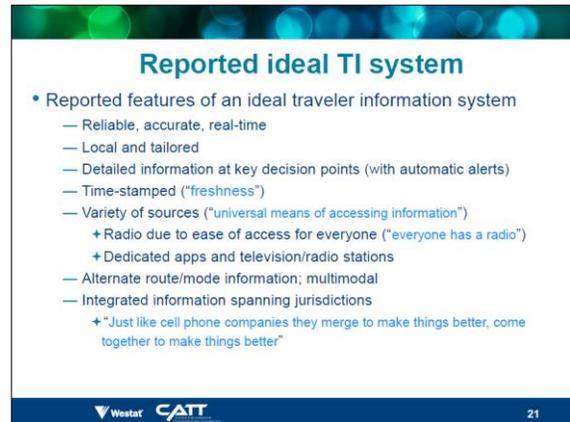
Emanuel Robinson from Westat shared preliminary findings from [NCHRP 08-82 Deployment, Use, and Effect of Real-Time Traveler Information Systems](#)<sup>19</sup>. The primary objectives of this national study were to synthesize agency practices; to develop guidance on assessing the potential effects of traveler information on behavior; and, to suggest agency practices that best facilitate the use of traveler information in the future. A significant portion of the research included a detailed assessment to understand travelers’ use, perception and need for information. Research was conducted in key cities throughout the United States using surveys, focus groups and trip logs. The project has developed a public-use database of the survey responses that will be available for use by other agencies. 511 telephone services were differentiated from other 511-branded web or mobile services. The phone services were found to have low use and awareness; however, respondents said they would use the service if they were aware of it. The study also explored the effect of traveler information on trip behavior. When changes in a trip were made, the information sources that most commonly influenced the change were radio, mobile apps and electronic message signs. Respondents were also asked what features would be included in the ideal traveler information service.

**Future TI: Readily Attainable Goals**

- Provide information that allows the public to *make better travel decisions*
- Make data easily accessible with simple agreements, no fees
  - Defined process to obtain data; database designed for easy accessibility by others
- New data sources
  - Determine if cheaper to install/maintain devices or have someone else provide the data
- Agency partnerships for data from multiple sources; private sector partnerships
- Support wide range of distribution mechanisms
- Evaluate user experience and use of available TI; alignment with user

Westat CATT 29

Some of the key features that were noted included reliable/accurate/real-time, localized/tailored, and detailed information at key decision points. Public perceptions were also compared with agency perceptions during the study. Both agreed information should be easy to access and use, as well as clear, concise and trustworthy. In addition to the consumer-based research conducted in this study, preliminary guidance was also developed for agencies to facilitate the best use of traveler information in the future. One recommendation in the preliminary guidance is to evaluate user experiences to ensure alignment with the services that are offered. A toolbox of low cost methods for assessing traveler information use and effect on travel behavior will be included. The study report, [NCHRP Web-Only Document 192: Deployment, Use and Effect of Real-Time Traveler Information Systems](#)<sup>20</sup>, is available online through the Transportation Research Board.



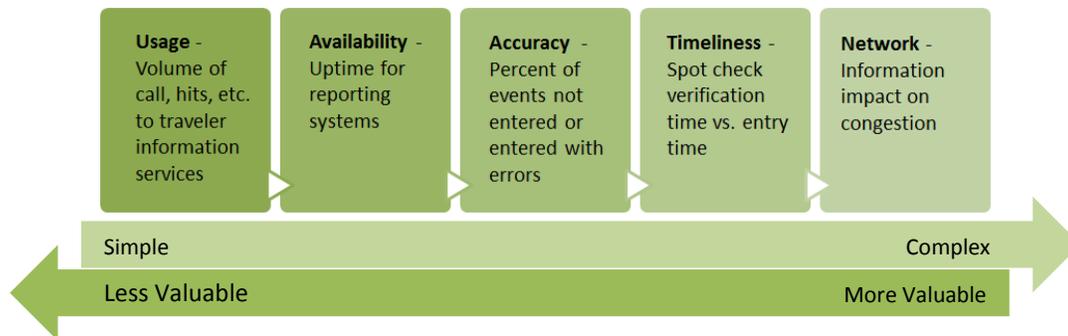
**Emanuel Robinson**

emanuelrobinson@westat.com, 240-314-5812

**4.4. Webinar 4 – Performance Management**

Performance management is becoming an increasingly important aspect of transportation agency operations. A key feature of the 2012 surface transportation legislation, MAP-21, is the establishment of a performance- and outcome-based program that will encourage states to invest resources in projects that will make progress toward national goals. MAP-21 specifically identifies traveler information services as one of several key actions under transportation systems management and operations. The Real-Time System Management Information Program further outlined in 23 CFR 511 establishes provisions for traffic and travel conditions reporting that directly relate to the performance of traveler information services. The following table summarizes the timeliness targets established in 23 CFR 511 for traffic and travel conditions. The final rule also requires this information to be 85% accurate and 90% available at a minimum.

In November 2012, ENTERPRISE hosted the final webinar for this project to further explore agencies’ current practices in monitoring the performance of traveler information programs. Practices in the states of Washington and Pennsylvania were featured during the webinar. They reflect a variety of approaches used to measure the performance of traveler information services today – approaches that range in complexity and value.



**Traveler Information Annual Update:  
Customer Focus**

- › 511 traveler information phone system:
  - 13 million calls in 10 years
  - Primary use in mountain passes – 74% of calls in first three quarters of FY 2012 compared to 68% of all calls in FY 2011
  - Seasonal variation in call volumes – spring/summer: 2,000 calls per day, peak winter: 11,000 calls per day
- › Traveler Information website:
  - Updated performance measure from "number of page views" to "number of unique users"
    - 4.6 million unique users in Jan 2012 storm is 142% more than during the 2010 snowstorm
    - 56 million page views in 2012 is 3% less than during the 2010 snowstorm.

Washington State Department of Transportation  
Gray Notebook 45, Annual Update

**Next generation: Integrating traveler information with system performance and reliability**

- › Annual Congestion Report: WSDOT's travel performance monitoring and reporting tool
  - Travel Delay
  - Vehicle Throughput
  - **Travel Time Analysis**
  - **Travel Reliability**
  - HOV Travel Monitoring
- › Moving Washington
  - **Operate Efficiently**
  - Manage Demand
  - Add Capacity Strategically



WSDOT's comprehensive annual analysis of state highway system performance

<http://www.wsdot.wa.gov/Accountability/Congestion/2012.htm>

Washington State Department of Transportation

Sreenath Gangula from the **Washington Department of Transportation** shared the agency's more established performance tracking for traveler information – both how services perform for travelers and how traveler information services contribute to overall performance of the transportation network. WSDOT's focused effort with performance management began in 2001 in response to political and public pressures regarding the department's performance. The Gray Notebook was born from WSDOT's intent to communicate performance to the public in a comprehensible, truthful, sincere and legitimate way. It is the department's quarterly accountability report used to provide the latest information on system performance and project delivery. General performance for traveler information is reported annually with the latest update in [Edition 45 of the Gray Notebook<sup>21</sup>](#). Performance is customer-focused and oriented toward tracking travelers' use of core services offered by WSDOT. Performance is also assessed in relation to how it impacts overall performance of the transportation system. For

example, WSDOT's [2012 Annual Congestion Report<sup>22</sup>](#) presents travel time reliability as a performance indicator by comparing estimated travel times on key routes at posted speeds against travel times at actual speeds. The data is then used in WSDOT's [95% Reliable Travel Times<sup>23</sup>](#) commute calculator. This feature uses travel time data to provide a reasonable approximation of the "worst case" travel time scenario. Using the calculated travel times, commuters can expect to arrive on time at their destination for 95 percent of their trips.

**Sreenath Gangula**

ganguls@wsdot.wa.gov, 360-705-6888

Mark Kopko from the **Pennsylvania Department of Transportation** described the agency's new quality assurance plan which has been designed to help the agency monitor performance against the new requirements for real-time system management information programs in particular. PennDOT has evaluated its current performance monitoring practices against the targets for the accuracy, timeliness and availability in 23 CFR 511. From that, the department has established new approaches for future performance monitoring that will help them meet the requirements established in 23 CFR 511. An

**Current Speed Data/Travel Times QA/QC**

- Accuracy
  - 3<sup>rd</sup> Party Quality Checks from I-95 Corridor Coalition
  - TMC Manual Observations
- Availability
  - 3<sup>rd</sup> Party Monitoring from 511PA Vendor
- Performance Measures
  - I-95 Corridor Coalition Data Quality Reports



www.dot.state.pa.us

overview of the PennDOT's current and future performance monitoring practices was provided for incidents, construction, travel times and hazardous weather. For example, the department's current measures for incident information center around uptime for their reporting system and the percent of events not entered or entered with errors in the system. Information quality is then reviewed primarily through random spot checks by staff. PennDOT is developing a next generation Advanced Traffic Management System that will be integrated with their reporting system and will expand the department's performance monitoring capabilities. Future incident monitoring will be enhanced with with an alarm module and the department also hopes to use the University of Maryland's Regional Integrated Transportation Information System to compare speed data with incident entry times as an additional indicator of timeliness and accuracy.

### Future Speed Data/Travel Times QA/QC

- Accuracy
  - Elimination of Smoothed Data during Select Events
  - Detector Health and Data Quality in ATMS
  
- Performance Measure
  - Assessing data quality
    - Overall (% observed of a report)
    - Station-specific
    - Route-specific




  
 pennsylvania DEPARTMENT OF TRANSPORTATION
   
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## 5. Framework

The purpose of this framework is to first document the context of an agency's current traveler information program – its long-term vision, near-term goals, dissemination tools, sources of data and operational practices. That high-level view may then be used as a foundation against which the agency can further consider the information that was presented throughout this project about dissemination tools, data and cost management, customer needs and performance management. Considering the information presented in each of these areas, the framework may then be used to develop a brief action plan for making changes to the agency's traveler information program.

The following questions may be used to outline the basic aspects of an agency's program and define a brief action plan in response to the information presented in this report. It is recommended that emphasis be placed on identifying 1-2 goals in each of the four main areas that can be accomplished within the next 12 months. Each goal should then be further developed to identify corresponding actions, responsible parties for implementation, affected stakeholders, impacted systems or services, estimated costs, potential funding sources and general duration to complete the action.

<b>Dissemination Tools</b>	1. What is the <u>long-term vision</u> for your traveler information program?
	2. What are the <u>top 3-5 near-term goals</u> for your program in the next 12 months?
	3. What are the <u>primary tools currently used</u> to disseminate traveler information and how do they relate to your program vision and goals?
	4. How might gaps among your current dissemination tools, vision and goals be addressed by <u>new tools</u> ?

Data and Cost Management	5. What are the <u>primary sources of data</u> used by your program, and what are the <u>defining characteristics</u> of that data?
	6. What are the <u>primary recurring costs</u> (e.g. staff salaries, vendor contracts for disseminating information) currently associated with your traveler information program?
	7. What are the <u>incentives or pressures</u> that drive your need to manage program costs?
	8. For what recurring costs <u>could sponsorship potentially be utilized</u> ?
Customer Needs	9. How is your agency <u>seeking customer feedback</u> on its traveler information services?
	10. Do you see <u>trends in customer feedback</u> that may indicate the need for changing a service?
	11. How is customer <u>feedback being incorporated into decisions</u> about traveler information services?
Performance Management	12. Are your <u>measures focused</u> ?
	13. Can the measure be <u>used to support decisions</u> about the traveler information program?
	14. Have you established <u>baseline measures and target goals</u> ?
	15. Is <u>data collection practical and repeatable</u> for the measure?

Traveler information will continue to evolve in the coming years. Maintaining a basic framework such as this will assist an agency with assessing new dissemination tools, data and cost management approaches, customer needs and performance within the context of their individual program.

## 6. Conclusion

Considering how much traveler information has changed since 511 was launched over ten years ago as a groundbreaking service for nationwide traveler information, it is difficult to imagine what traveler information will look like in the next decade. There will likely be services tomorrow that cannot be imagined yet today. In 2001, there was no conception of Twitter and today nearly all of the states are using this as a key tool for disseminating traveler information.

This project provided insight on trends in several areas of interest in 2012 that will also likely change significantly by 2013. Social media use for disseminating traveler information is increasing. Although data availability is also growing in general through third party resources, traveler information appears to be expanding slowly to local roads and transit services. Fewer than 10% of the agencies responding to the ENTERPRISE survey envision themselves as becoming focused on simply providing data for other organizations to disseminate traveler information. Performance measures are also recognized as being important but the practice of performance management is still relatively new for most agencies and measurement approaches vary significantly. Finally, although sponsorship still appears to be a prospective cost management strategy, the marketability of traveler information is still evolving.

States can continue to gather information about trends in some of these areas through the following resources online using the web site references made throughout this document.

- FHWA Real-Time System Management Information Program
- 511 Coalition
- AASHTO Subcommittee on Transportation Communications
- [FHWA Operations Performance Measurement Program](#)<sup>24</sup>

Additional resources are also referenced in the webinar summaries available on the ENTERPRISE Next Era of Traveler Information project web page.

## 7. Web Site References

There are a number of hyperlinks within the text of this document that are accessible in electronic format. For those viewing this document in paper format, following is a list of the hyperlinks in the order that they appear.

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<sup>1</sup> ENTERPRISE <http://www.enterprise.prog.org/>

<sup>2</sup> ENTERPRISE Next Era of Traveler Information [http://enterprise.prog.org/Projects/2010\\_Present/nexteraoftravelerinfo.html](http://enterprise.prog.org/Projects/2010_Present/nexteraoftravelerinfo.html)

<sup>3</sup> 23 CFH 511 <http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&sid=b1decc7f2e9c50fd60b202cfcbb78e0&rgn=div5&view=text&node=23:1.0.1.6.16&idno=23>

<sup>4</sup> MAP-21 <http://www.fhwa.dot.gov/map21/>

<sup>5</sup> FHWA Real-Time System Management Information Program <http://www.ops.fhwa.dot.gov/1201/index.htm>

<sup>6</sup> 511 Coalition <http://www.deploy511.org/>

<sup>7</sup> Wikipedia: Social Media [http://en.wikipedia.org/wiki/Social\\_media](http://en.wikipedia.org/wiki/Social_media)

<sup>8</sup> AASHTO Subcommittee on Transportation Communications <http://communications.transportation.org/Pages/default.aspx>

<sup>9</sup> State DOT Social Media Survey 2012 [http://communications.transportation.org/Documents/Social\\_Media\\_Survey\\_2012.pdf](http://communications.transportation.org/Documents/Social_Media_Survey_2012.pdf)

<sup>10</sup> Twitter <https://twitter.com/>

<sup>11</sup> Facebook <https://www.facebook.com/>

<sup>12</sup> LinkedIn <http://www.linkedin.com/>

<sup>13</sup> Flickr <http://www.flickr.com/>

<sup>14</sup> YouTube <http://www.flickr.com/>

<sup>15</sup> Pinterest <http://pinterest.com/>

<sup>16</sup> Storify <http://pinterest.com/>

<sup>17</sup> Customer Service Manager.com: Five Things Today's Consumers Want <http://www.customerservicemanager.com/5-things-todays-customers-want.htm>

<sup>18</sup> Government Technology: 2012 Year in Review <http://www.govtech.com/e-government/2012-Year-in-Review-Social-Media.html>

<sup>19</sup> NCHRP 08-82: Deployment, Use and Effect of Real-Time Traveler Information Systems <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=2957>

<sup>20</sup> NCHRP Web-Only Document 192: Deployment, Use and Effect of Real-Time Traveler Information Systems [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_w192.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w192.pdf)

<sup>21</sup> The Gray Notebook Edition 45 (WSDOT) <http://wsdot.wa.gov/publications/fulltext/graynotebook/Mar12.pdf>

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<sup>22</sup> The 2012 Congestion Report (WSDOT) <http://www.wsdot.wa.gov/Accountability/Congestion/2012.htm>

<sup>23</sup> WSDOT's 95% Reliable Travel Times Commute Calculator  
<http://www.wsdot.com/traffic/Seattle/traveltimes/95reliable.aspx>

<sup>24</sup> FHWA Operations Performance Measurement Program [http://ops.fhwa.dot.gov/perf\\_measurement/index.htm](http://ops.fhwa.dot.gov/perf_measurement/index.htm)