

# Vision and Operational Concept for Enabling Advanced Traveler Information Services

## Market Readiness Assessment

**Final Report — May 22, 2012**

**Task#: CA04-079**

**Contract #: DTFH61-06-D-00004**



U.S. Department of Transportation  
**Federal Highway Administration**  
**Research and Innovative Technology Administration**

## **Notice**

This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The U.S. Government assumes no liability for the use of the information contained in this document. This report does not constitute a standard, specification, or regulation.

The U.S. Government does not endorse products or manufacturers. Trademarks or manufacturers' names may appear in this report only because they are considered essential to the objective of the document.

## **Quality Assurance Statement**

The Federal Highway Administration (FHWA) provides high-quality information to serve Government, industry, and the public in a manner that promotes public understanding. Standards and policies are used to ensure and maximize the quality, objectivity, utility, and integrity of its information. FHWA periodically reviews quality issues and adjusts its programs and processes to ensure continuous quality improvement.

---

**Technical Report Documentation Page**

<b>1. Report No.</b> FHWA-JPO-12-053		<b>2. Government Accession No.</b>		<b>3. Recipient's Catalog No.</b>	
<b>4. Title and Subtitle</b> Vision and Operational Concept for Enabling Advanced Traveler Information Services: Market Readiness Assessment (EnableATIS)				<b>5. Report Date</b> May 2012	
				<b>6. Performing Organization Code</b>	
<b>7. Author(s)</b> Lisa Burgess, Alan Toppen, Mike Harris				<b>8. Performing Organization Report No.</b>	
<b>9. Performing Organization Name And Address</b>  Kimley-Horn and Associates, Inc. 7740 N. 16th Street, Suite 300 Phoenix, AZ 85020				<b>10. Work Unit No. (TRAIS)</b>	
				<b>11. Contract or Grant No.</b> DTFH61-06-D-00004	
<b>12. Sponsoring Agency Name and Address</b>  United States Department of Transportation Federal Highway Administration Research and Innovative Technology Administration Intelligent Transportation System Joint Program Office 1200 New Jersey Avenue, S.E., Washington, DC 20590				<b>13. Type of Report and Period Covered</b> Final Report	
				<b>14. Sponsoring Agency Code</b>	
<b>15. Supplementary Notes</b>  The GTM for FHWA for this task was Robert Rupert					
<b>16. Abstract</b>  The purpose of this market readiness assessment is to identify next steps for USDOT to research, demonstrate and advance the objectives of EnableATIS. This will include demonstrating those key concepts that will be within the USDOT and agency sphere of influence for a next generation traveler information environment. Furthermore, it will be essential to demonstrate successful public-private partnering for data sharing, information delivery and other aspects of traveler information in a new and emerging data and technology environment. It is recommended that innovative approaches for future traveler information capabilities be explored through demonstrations and through a more formal pilot project to be able to analyze, evaluate and document outcomes that can then be used to inform the level of future investment. This document identifies the current state of some of the key components or activities (i.e., types of data, institutional relationships, among others) that are envisioned to be needed and requiring more formal testing through a pilot project. Recommended steps and a timeline for structuring demonstrations and a pilot project also are included.					
<b>17. Key Words</b>  EnableATIS, Traveler Information, assessment, market readiness			<b>18. Distribution Statement</b> No restrictions.		
<b>19. Security Classif. (of this report)</b> Unclassified		<b>20. Security Classif. (of this page)</b> Unclassified		<b>21. No. of Pages</b> 16	<b>22. Price</b> N/A

# Table of Contents

- Market Readiness Assessment..... 1**
- INTRODUCTION ..... 1
- TESTING AND PILOTING ENABLEATIS CONCEPTS ..... 1
- DEMONSTRATION AND PILOT OUTCOMES ..... 5
- ADDRESSING GAPS IN MARKET READINESS ..... 5
- TIMELINE AND KEY STEPS FOR ENABLEATIS PILOT PROGRAMS ..... 8
- VALUE PROPOSITION FOR ENABLEATIS PILOT PROJECTS ..... 10

# Market Readiness Assessment

## Introduction

The Operational Concept for EnableATIS identified two operational scenarios, including a desired end state for a future traveler information framework. Innovation within the traveler information industry is currently being driven by mobile data and mobile applications. Moving into the future, traveler information will be driven by partnerships for data gathering and information delivery with changing roles for various stakeholders. While it is difficult to assign specific timeframes and milestones to an end state that is aligned (and dependent) on technology evolution through a variety of supply chains, there are key concepts that need to be piloted and tested in the near term in order to set the stage for future innovation and program evolution.

The traveler information marketplace will continue to evolve, with or without specific USDOT intervention. EnableATIS is flexible and should be able to take advantage of advancements and innovations to provide leadership and enhancement of key transformative components of traveler information as opportunities occur. The pace of this evolution, as well as the focus on transformative components of traveler information, can be accelerated through USDOT leadership and involvement.

The purpose of this market readiness assessment is to identify next steps for USDOT to research, demonstrate and advance the objectives of EnableATIS. This will include demonstrating those key concepts that will be within the USDOT and agency sphere of influence for a next generation traveler information environment. Furthermore, it will be essential to demonstrate successful public-private partnering for data sharing, information delivery and other aspects of traveler information in a new and emerging data and technology environment. It is recommended that innovative approaches for future traveler information capabilities be explored through demonstrations and through a more formal pilot project to be able to analyze, evaluate and document outcomes that can then be used to inform the level of future investment. This document identifies the current state of some of the key components or activities (i.e., types of data, institutional relationships, among others) that are envisioned to be needed and requiring more formal testing through a pilot project. Recommended steps and a timeline for structuring demonstrations and a pilot project also are included.

## Testing and Piloting EnableATIS Concepts

Core components of a next generation traveler information system framework and potentially transformative elements of a future EnableATIS traveler information environment that will need to be developed, piloted and tested will include:

- **Multi-Modal Integration:** Integration and/or aggregation of existing modal and operations data, which is not occurring in most regions, to support enhanced traveler information;

- Facilitated Sharing: Use of new and evolving data types and data sharing arrangements to support traveler information;
- End-to-End Trip Perspective: Applications of this data connecting more than just transportation system or mode link information in order to provide a full end-to-end data set and total trip information;
- Predictive: Advancement in analytics and logic to generate predictive information specific to users;
- Link to Systems Management: New processes at agencies to integrate non-agency and user-generated data types into system operations and management; and
- Enhanced Delivery Mechanisms: Impact of information delivery mechanisms on driver behavior, driver distraction, and user acceptance.

The *Vision and Operational Concept for EnableATIS* presented a desired end-state of an integrated multimodal and multisource traveler information environment that would lead to transformative applications of traveler information. The bullets above represent some of those transformative approaches.

There are two recommendations for USDOT to further research, evaluate and advance EnableATIS concepts. Both options presented below are intended to help USDOT and the ATIS community work through important technical, institutional, partnering and user acceptance issues which will greatly shape the future of traveler information. The options below can be conducted independently, or option 1 could inform a broader pilot test as outlined in option 2. Both options presented below have strengths and weaknesses, and it is recommended that both should be explored.

***Option 1: Broad Agency Announcement (BAA) for Innovative ATIS Applications and Solutions***

This option would create a mechanism to solicit a wide range of innovative solutions that would fit within the desired capabilities identified in the Robust Scenario of the EnableATIS Operational Concept. This capabilities could include integrated modal information aggregated at a regional level and leveraged into a comprehensive traveler information offering, enhanced delivery of traveler information, unique applications developed by a public sector entity, or demonstration of predictive capability to support traveler information.

This approach of using a BAA or similar procurement technique has been used by USDOT as part of other exploratory efforts for ITS and connected vehicle research focus areas. It can be a near term option that may even set the stage for a more refined pilot test (as discussed in option 2). The strengths of this option are:

- Established mechanism that is routinely used by USDOT to elicit a wide range of innovative solutions;
- May help to identify a desirable capability, partnership or application not previously defined for EnableATIS; and
- Provides flexibility to be able to advance ideas and concepts to greater refinement for testing.

Weaknesses of this option are:

- Demonstrations may be too narrow and not fully demonstrate potential benefits and impacts of a robust traveler information solution (or solutions);
- Variable timeframes for completion due to the diversity of potential solutions being demonstrated; and
- ATIS is a broad and complex field, and potential partners may not be willing to share proprietary research or applications outside of the commercial environment.

### **Option 2: Pilot Program**

This option would demonstrate a more integrated suite of ATIS capabilities within a formal and defined pilot test environment. This would ideally be an established, mature ITS program in an urban area, with multimodal capabilities as part of the system operations. Next generation traveler information capabilities and services would be demonstrated through private sector partnerships and systems, and benefits (or impacts) to agency operations also would be an integral part of the pilot program objectives. This would require a Concept of Operations, Implementation Plan, Pilot Test and Evaluation.

Strengths of this option include:

- It offers a more structured process, allowing USDOT to more fully specify the objectives;
- Will require more USDOT involvement throughout the testing process but with that involvement comes greater understanding and articulation of outcomes;
- Ability to demonstrate and evaluate next generation traveler information capabilities as part of a larger, integrated transportation environment; and
- A formal pilot program or pilot site will potentially generate significant interest and thus provide for a competitive and innovative set of responses from which to select;
- Ability to benchmark and draw lessons learned that could be transferred or applied to other areas.

Weaknesses of this option are:

- Process for selection, initiation, execution, demonstration and evaluation could be lengthy. There is a risk of new capabilities emerging while the pilot is still in progress;
- There are many unknowns in this evolving marketplace, which could make it challenging for USDOT or partners to cost out or budget; and
- Potential partners may not be willing to share proprietary research or applications outside of the commercial environment.

Pilot locations are recommended to be selected through a competitive process, similar to the Integrated Corridor Management Sites, SAFETRIP 21, and other connected vehicle pilots and demonstrations. This could also be coordinated through an existing coalition (such as the

Cooperative Transportation System Pooled Fund Study). Multiple sites (up to 2) would ideally provide the capability to demonstrate some different approaches, perhaps with different focus areas, different levels of agency partner involvement and different private partners.

Pilot site recommendations should leverage some established traveler information program capabilities, as well as transportation system mobility challenges that could demonstrate an impact of new and enhanced traveler information services on system operations at the network level. Stakeholders that would be involved in the pilot would hopefully already have resource investment into foundational elements of the travel information market.

Desirable characteristics and attributes of an EnableATIS pilot site include:

- Multimodal urban area, with a population of at least 1,000,000 to be able to demonstrate some level of market penetration and adoption;
- Multiple urban areas within a state, or urban regions in close proximity that are in separate states (potentially sharing a common interstate corridor), the latter of which would provide for a unique demonstration of cross-boundary, multi-system integration capabilities;
- A mature freeway management system and some level of arterial management capabilities;
- Institutional framework in place to support pilot (state, local agency, transit/rail agency);
- Transit technologies/AVL to provide real-time schedule and location information and would ideally have multiple transit providers with this capability;
- A successful Transportation Demand Management (TDM) program (mode shift, rideshare programs, among others) or a goal to move toward a stronger TDM focus. A pilot site should have connectivity and programs in place to share trip and trip sharing information to travelers and regional employers;
- Congestion management strategies such as managed lanes, shoulder operations or comparable operations strategy that may require specific information about dynamic strategy implementation being conveyed to travelers in a pre-trip and en-route fashion;
- Appeal to the private sector to participate, either through the pilot site's potential market share, demographics, or existing established private sector activities;
- Established relationship with the private sector as a data collection or data aggregating partner, or strong willingness to participate in such a relationship;
- Presence of multiple modes, such as transit, parking, commuter rail/park and rides, demand management program environment; and
- Established and recognizable traveler information program through 511 (phone, web or application), travel times, local media partners, and other program elements.



## Demonstration and Pilot Outcomes

Specific scopes will need to be developed for both the BAA demonstration and pilot test, and these scopes should include a set of criteria or desired outcomes from which to base an evaluation and identify target research and demonstration objectives. Based on the EnableATIS Operational Concept, the following represents an initial set of information to be gathered during a pilot test. Individual demonstrations may showcase capabilities in a stand-alone environment, whereas a pilot should be structured to capture several more dimensions within an integrated environment:

- User preferences and acceptance of new types of information (i.e., sustained market demand for services);
- Potential for critical mass of users to quickly adopt new traveler information service offerings;
- Willingness on the part of users to pay for enhanced information;
- Sufficient market penetration to provide a viable business model for private partners;
- User response to information provided, which will translate into user confidence and reliance on enhanced levels of traveler information;
- Ability to integrate non-surface transportation information into an enhanced data offering (i.e., airline schedules, airport security wait times, queues or numbers of patrons waiting in a train station, among others).
- Impacts of mobile delivery mechanisms on safety, distracted driving, usability while en-route, and timing of information to inform decision making; and
- Willingness of users to make more than just their location information available. For example, will users be willing to provide a “background agent” application with access to outlook/calendars, specific appointments, aggregation of historical daily patterns and travel preferences in order to get intelligent and relevant suggestions on travel options or recommendations.

In addition, EnableATIS evaluations will need to also consider the impacts of enhanced traveler information on the overall system, including:

- Impacts on the transportation network of dynamic routing information provided to users;
- Willingness on the part of transportation operations and management agencies to want to participate as part of regional demonstrations and pilots; and
- Willingness by agencies to integrate new forms of data generated through EnableATIS into their operations and operations decision making, including documenting challenges or barriers to doing so.

## Addressing Gaps in Market Readiness

Pilot projects will provide an important step in evaluating the feasibility, potential for success, as well as gaps for future traveler information strategies. There is recognition that potential pilot areas may need some additional technical assistance and institutional coordination in order to be able to

U.S. Department of Transportation, Research and Innovative Technology Administration  
Intelligent Transportation Systems Joint Program Office

successfully support a pilot test and evaluation for EnableATIS. There is also recognition that not all gaps will need to be filled prior to testing, and these gaps might provide a starting point for selection criteria for potential pilot locations.

The following table identifies foundational elements that are envisioned to be part of (or a required element of) a potential pilot project, as well as their general states of readiness and gaps to support advanced strategies. It is meaningful to consider the implications of the identified gaps on the transformative concepts. The presence of these gaps in a demonstration activity (such as through a BAA) or pilot test should provide valuable insight into what is possible in an imperfect environment. As part of the development activities, USDOT may need to make provisions (funding and schedule) to help support selected regions in advancing their state of readiness to effectively demonstrate evaluate new traveler information concepts.

**Table 1: EnableATIS Readiness Gaps**

Supporting Activity	BAA	Pilot Test	Current State	EnableATIS Readiness Gaps/Opportunities
<b>Data Elements</b>				
Freeway Real-Time Data, Freeway Congestion Data	X	X	Data available through agency operated detectors, CCTV, through private sector infrastructure and probes.	Some areas have integrated public and private sector sources; private sector data is available in more markets and larger geographic areas than agency-owned systems. May be some limited examples of sharing this data in real time across regional or state boundaries.
Arterial Real-Time Data	X	X	Limited data available to support traveler information. Growing availability of arterial CCTV in many regions.	Limited public sector data resources; private sector market continues to move forward with strategies for developing arterial congestion information using probe data. Need to seek out new ways to better utilize CCTV to support arterial information and analytics.
Incident Data on Freeways and Arterials		X	Real-time data is available through public safety systems. There are many good examples of public safety providing this data to transportation agencies. Private sector traffic and media reporting companies also are established sources of regional incident information in many markets.	Freeway/highway incident information may be more readily available due to single source (state police/highway patrol); local public safety data availability may be inconsistent. The complexity of this data and data source and resulting operational environment may not lend to an open ended grant application.
Planned Event Information (Work Zones, Special Events)		X	Static data available primarily through agencies. Not all data may be transmitted through current traveler information or reporting channels.	May be limited sharing of this information for multiple agencies in a region (i.e., freeway work zone information but limited arterial work zone information). The complexity of this data and data source and resulting operational environment may not lend to an open ended grant application.
Static Transit Schedule and Service Data	X	X	Readily available and published through transit providers; the private sector has an established model for accessing, using and distributing this schedule and trip planning information.	May be some transit providers that are not willing to provide this data to provide a complete regional data set.

<b>Supporting Activity</b>	<b>BAA</b>	<b>Pilot Test</b>	<b>Current State</b>	<b>EnableATIS Readiness Gaps/Opportunities</b>
Real-time Transit Data	X	X	Systems are in place for many transit operators in urban areas; majority supports transit operations, and there are some areas that are providing real-time information to transit users.	Regions with multiple providers have limited connectivity among these systems to share or provide information across different transit systems Real-time data providers (i.e., NextBus) would need to be engaged
Integrated Multi-source, Multimodal data	X	X	Many regions have multiple sources of real-time operations data (transit and freeway operations), but this data is not integrated across modes or expanded to include other modes (i.e., parking).	Some development effort and coalition building will be required to support this activity.
Weather Conditions Data		X	Available through multiple sources, including agencies, private sector weather services, National Weather Service (forecasts).	Data exists, but there may be a disconnect between the data and actual weather impacts on roads and travel conditions. The complexity of this data and data source and resulting operational environment may not lend to an open ended grant application.
User-generated Content and Context (non-probe)	X	X	Data is available, but harnessed by those entities to support their marketing and business operations.	Limited application of this information to support traveler information, but this dynamic user-generated content is a rapidly emerging field. Will require further research to develop the analytics to link to traveler information applications.
<b>Non-Data Elements</b>				
Dynamic Routing	X	X	Routing information provided through private sector dissemination applications. Many agencies are reluctant or prohibited by policy for providing specific alternate route information to the public.	Inconsistent policies for alternate route information by agencies. May be limited real-time information links for planned events or work zones to private sector dynamic routing applications.
Predictive applications for ATIS	X	X	Limited development and testing to date of predictive algorithms for traveler information.	Limited development and testing on a regional scale, to demonstrate integrated predictive traveler information capabilities. Would require leadership by the private sector and further research to develop the analytics to support traveler information.
End-to-End Trip Perspective		X	Origin-destination data not easily available in real-time. Non-transportation system sources also not yet part of an integrated solution.	Represents a significant gap in current practice, but also a significant opportunity to integrate data across modes and provide to users to guide full trip decision making.
Link to System Management	X	X	There are some agencies integrating new data sources to develop travel times, support other traveler information and implement operational strategies.	A gap in current practice is that the current status is primarily limited to the freeway environment, and not the overall system to include arterials and transit.
Enhanced Delivery Mechanisms	X	X	Multiple existing and emerging ways to deliver traveler information to users.	Impacts of new technologies for delivering information to users are not fully understood. Represents a key opportunity to assess human factors and safety implications of ATIS delivery mechanisms, including mobile and in-vehicle.

## Timeline and Key Steps for EnableATIS Pilot Programs

The following outlines a roadmap of key steps and recommended timeframes for these activities for EnableATIS. Many of these activities draw upon next steps from the Operational Concept document. There will need to be ongoing stakeholder engagement and coalition building, as well as partnering with the industry to leverage new technology developments and industry trends.

Assuming the Dynamic Mobility Applications Program Phase 3 Demonstrations begin in 2014, the timeline for EnableATIS activities would need to align with key decision points and activities within the DMA program. As such, activities for a BAA and a pilot would need to be initiated in 2012. It is recommended that an industry-wide Request for Information be issued as an initial step to inform near-term activities as well as assess private sector interest in participating in proposed EnableATIS demonstration and pilot test activities.

If BAA outcomes are to inform requirements or a Concept of Operations, there should be a near-term focus on developing the BAA procurement document and plan. This would need to be initiated in 2012 with activity monitoring and results reporting occurring through mid 2013.

### Initiate Activity (2012)

Ongoing	Establish and engage the traveler information community through focused coalition-building, establish plan for ongoing stakeholder involvement
3 months	Develop and issue an industry Request for Information based on the End-State Scenario and desired transformative applications in the Operational Concept. Use input to inform the Concept of Operations.
6 months	Establish Concept of Operations, Requirements, Implementation Plan and Evaluation Plan for Projects
1 month	Establish USDOT budget for seed funding (grant) based on requirements

### Execute Activity (2013)

3 months	Establish criteria for Grant Demonstrations and Pilot Test Sites and develop Request for Competitive Grant Applications
3 months	Evaluate and short list candidate sites
3 months	Further refine candidate list based on state of readiness  Initiate Projects

### Monitor and Report (2014)

Operations and evaluation  
Stakeholder feedback on preliminary outcomes  
Incorporate research outcomes into longer term investment strategies

U.S. Department of Transportation, Research and Innovative Technology Administration  
Intelligent Transportation Systems Joint Program Office

The following provides additional detail on the overarching needs for re-engaging the traveler information community and establishing and executing an updated traveler information research agenda. Both of these activities will require USDOT leadership and facilitation.

### ***Re-engage the Community/Coalition***

A necessary step identified in the Operational Concept was to initiate the dialogue with the broader traveler information community, re-engage key stakeholders from the public and the private sectors, as well as seek out those stakeholders whose markets either were not yet established or were not yet mature. USDOT is in a unique position to leverage the connected vehicle discussions to be able to get the data providers, aggregators, equipment manufacturers and disseminators excited about the next generation of traveler information. Leading up to pilot projects, there is a need to re-energize the community and build interest in demonstrating cutting edge and new approaches to traveler information, including transportation agencies and coalitions (corridor and multi-state groups).

With a focus on transformative application, there needs to be a focus on engaging new stakeholders into this next generation traveler information framework. In addition to technology industry stakeholders, the analytics required for transformative applications will open the door to entities that may have not traditionally been a part of traveler information or transportation system operations. For example, the retail industry relies on companies that compile market research of consumer preferences through detailed analysis of consumer patterns, product choices, consumer demographics, frequency of purchases and a host of other parameters. This profile information provides valuable insights into product placement, advertising, promotions, and other strategies all aimed at increasing consumer spending. In many instances, consumers are unaware of the level of detailed information that is collected about them or how it is used. Applying this to the traveler information industry could unlock a tremendous potential of end-to-end travel information needs and information preferences.

Similarly, other industries provide examples of applying new analytics to existing infrastructure or systems to generate new types of data and information to support operations and decision making. One such example is the security industry. Again, using a retail example, there are companies who have developed sophisticated analytics that utilize existing facility security cameras, and are able to derive “hot spots” of where people aggregate in a facility, how they move through a facility, and other dynamics. One potential derivation to the transportation industry would be the existing network of CCTV cameras on freeways and arterials; in particular, using arterial CCTV to be able to assess and analyze congestion, pedestrian movements or other activity. This represents just one potential application of enhancing an existing (and potentially underutilized) data source in a new way to generate needed or valuable information to support traveler information, formulate predictive algorithms, or assess effectiveness of system operations strategies.

### ***Update the Research Agenda***

With the changing market over the last decade, and the envisioned market changes and influences over the next five to 10 years, ATIS research is outdated. There is a need for USDOT to lead the establishment of a new research agenda, to refresh and refocus on some of the key research needs in a connected vehicle and mobile-enabled traveler information environment. The previous section identified some core elements that would need to be part of the research focus. These research

needs would in theory be addressed by the scope of either or both the BAA demonstration and/or the pilot test. As the projects are formed there are some important near-term research needs that will be required to be addressed:

- Human behavior and the user experience with traveler information;
- Human factors, human-technology interface and safety impacts of a significantly more robust suite of information being delivered across multiple platforms;
- Accuracy and validity of real-time predictions across modes;
- Reliability of multi-source data;
- Context of data and information needs;
- Market dynamics and market research (next generation of ‘what do users want?’);
- How traveler information impacts and influences the transportation network operations;
- Research into enhanced planning and operations activities for the public sector;
- Social trends and issues that will influence traveler information (i.e., generational influences, socio-economic influences, livability, sustainability, among others); and
- Methodologies for how to obtain and analyze total trip dynamics based on ATIS usage and user information.

## Value Proposition for EnableATIS Pilot Projects

Next generation traveler information offers the potential to transform how users get information, make their travel and daily decisions, as well as how agencies are able to use information to enhance system operations. From a market readiness perspective, there are many important foundation elements already in place, and there are emerging forms of data and delivery mechanisms that will shape and influence how users interact with this information. Traveler information offers a unique opportunity to influence how users make decisions about how, when and where they travel.

The EnableATIS Operational Concept identified that there will be aspects of the traveler information market that emerge and evolve with or without USDOT involvement. The number of applications in today’s technology environment that are harnessing information and making it available to users via mobile devices grows daily. However, to elevate the user-optimal traveler information choices and the system-optimal operational strategies, there will need to be a focused effort on demonstrating the viability of next generation transformative concepts.

Pilot tests, demonstrations and evaluations are needed to:

- Demonstrate viability of new partnering approaches and that a viable market exists to sustain private sector involvement and spur continued innovation;
- Demonstrate the activities required to support a multimodal, multisource traveler information environment;
- Develop unique and innovative approaches to transformative aspects of a next-generation traveler information suite of capabilities, including end-to-end trip perspectives and predictive applications and analytics;

- Demonstrate the link between comprehensive and robust traveler information and its impact and benefits on travelers' daily decisions; and
- Identify how the system can operate to better manage congestion through mode shift, TDM strategies and optimize capacity across multiple modes and networks.

The ATIS industry provides some unique opportunities to leverage costs and resources through partnering. Although USDOT leadership and resources will be required to get areas ready for meaningful demonstrations and to conduct these important pilot programs, the goal is for this investment to demonstrate that there is user demand, tangible benefits to the transportation system, and a viable and sustainable market that promotes continued innovation.



U.S. Department of Transportation

**Federal Highway Administration**  
**Research and Innovative Technology Administration**

U.S. Department of Transportation  
Federal Highway Administration  
Research and Innovative Technology Administration  
Intelligent Transportation System Joint Program Office  
1200 New Jersey Avenue, SE  
Washington, DC 20590

Report No. FHWA-JPO-12-053