ENTERPRISE

ENTERPRISE Program
FY 2012 Work Plan

Prepared for the

ENTERPRISE Pooled Fund Study

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Prepared by

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Program Overview

The ENTERPRISE Program represents a forum for collaborative Intelligent Transportation Systems (ITS) research, development, and deployment ventures reflecting the interests of governmental entities and industrial groups. This forum also facilitates the sharing of technological and institutional experiences gained from individual ITS projects conceived and initiated by each participating entity. The intent is to use a pooled fund program as a mechanism to support jointly-sponsored ITS projects of shared interest. These projects form this annual ENTERPRISE work plan. The scope of the ENTERPRISE Program promotes North American ITS development, reflecting the active involvement of U.S. and Canadian member agencies. ENTERPRISE also seeks to take advantage of technologies being developed outside North America. ENTERPRISE's European member is the Dutch Ministry of Transport, Rijkswaterstaat.

ENTERPRISE has approved a number of work plans since its inception in 1991 and completed nearly 50 projects. Each project has followed the vision of ENTERPRISE which defines the program's global view of highway travel. ENTERPISE aims to be consistent with the vision of higher bodies, such as ITS America and ITS Canada, concerning the development and use of ITS technologies and the benefits that this will bring. ENTERPRISE envisions a highway system in which advanced technologies continue to support the safe, efficient, convenient, and socially and environmentally sound movement of people and goods. Complete details on previous work plans and individuals projects are available through the program website at: http://enterprise.prog.org/.

Financial Status

ENTERPRISE North American members contribute $30,000 or more annually to the pooled fund and are reimbursed for program travel. Non North America members contribute $25,000 or more per year to the program and are not reimbursed by ENTERPRISE for program travel expenses. In FY 2011 (October 1, 2011 through September 30, 2012), 16 member agencies are anticipated to contribute financially to the projects included in this work plan.

Projects

During 2011 member agencies submitted project ideas for this FY 2012 Work Plan. The initial project ideas were reviewed by the ENTERPRISE Executive Board and a selected number of projects were approved for development of full project proposals to describe the project ideas in additional detail. The project proposals were then reviewed and voted on by the board and finally approved at the August 2011 Executive Board meetings as projects for the FY 2012 Work Plan. Complete details on the project selection process can be found in the ENTERPRISE Management Plan which is posted on program website: http://enterprise.prog.org/.

The following table summarizes the voting results and estimated project costs to complete the four approved projects.

Table 1: FY 2012 Work Plan Funding Plan

Expense	Estimated Costs	
2012 Projects		
Project 1: Intersection Warning Systems – Evaluating Nationwide Deployments	$ 95,000	
Project 2: The Next Era of Traveler Information	$ 95,000	
Project 3: Intelligent Workzone – Synthesis of Best Practices	$ 40,000	
Project 4: HAR – Understanding the Best Practices and Future Direction	$ 50,000	
Program Administration Support	$60,000	
Member Travel Support (two in person meetings)	$34,000	
Revenue		**Estimated Revenue**
Member Annual Contributions		$475,000
Total (Revenue vs. Expenses)	**$374,000**	**$475,000**

The states will be directly involved with finalizing contractor cost estimates, scopes of work and schedules for each of the projects to ensure concurrence with the final mix of projects contracted for this work plan.

Additional project details for the approved projects are included on the following pages.

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2012 Work Plan

2012 Project #1:
Intersection Warning Systems – Evaluating Nationwide Deployments

Project Background, Summary, and Objectives:

The 2010 Work Plan Project 'Developing Consistency in ITS Safety Solutions – Intersection Warning Systems' will conclude with preliminary standards and an evaluation framework for additional intersection warning systems deployments and MUTCD consideration. The benefits of this will include the ability for vendors to begin developing to a common, consistent approach, and will also allow all the deployments (that follow this guideline) to share information on the results of deployment, effectively normalizing the data acquired from multiple agency deployments.

This ENTERPRISE Project proposes to take the topic of intersection warning systems a step further and evaluate the actual deployments of Intersection Warning Systems that utilize the preliminary standards developed during the 2010 ENTERPRISE Intersection Warning Project.

As an example, Minnesota has begun early preparation for a deployment of up to 150 Intersection Warning Systems (IWS) that will utilize the specifications developed in the initial project. Other ENTERPRISE member agencies (especially those involved in the ENTERPRISE project) have also identified the potential for deployments in their states.

Once the preliminary standards are established and multiple states and provinces begin to use them for deployments, a virtual 'test bed' of deployments will exist, each of which has deployed according to common specifications.

Similarly, another result of the 2010 ENTERPRISE Intersection Warning System project will be consensus on a common Evaluation Framework. This framework will help guide each agency deploying IWS to utilize common data collection layouts and processes.

This Phase 2 Intersection Warning Systems Project will act as a common evaluation coordination project. In this capacity, the project will:

- Support any agency with questions about the preliminary standards or about the common evaluation framework;
- Coordinate with all agencies that deploy IWS to gather quantitative and qualitative data from their local deployments;

- Offer a comprehensive evaluation of the impacts that the IWS have on crashes and driver behavior by evaluating the (potentially) hundreds of deployments that all utilize the common specifications developed in the 2010 project; and
- Further revise the preliminary standards and prepare them for submission to the National Committee on Uniform Traffic Control Devices.

Scope of Work with Task Descriptions:

Task 1: Evaluation Planning

In Task 1, the Contractor will prepare an Evaluation Concept and Evaluation Plan defining the focus of the IWS Evaluation. The Evaluation Plan documents will be used for several reasons:

- Explaining the project to transportation agencies that have (or are planning to) deployed IWS, serving as a recruiting tool to help agencies understand the benefits of this collaboration, and ideally to elect to participate if it is appropriate;
- Allowing the participating agencies (and other ENTERPRISE members) to reach consensus on exactly what will be evaluated, and how the evaluation will be performed. Everyone recognizes that the consistent use of preliminary standards will result in consistent deployments and allow for the data from all IWS to be normalized, and therefore lead to a large sample size. However, there are specific details to be decided about how much can be learned and the process for doing so.
- Defining the specific activities to be performed by the Contractor to gather, assemble, analyze and report the data.

Task 1 will conclude with the group of agencies reaching consensus on an Evaluation Plan. The Evaluation Plan will describe in detail the role of the Contractor and the role of the agencies (e.g. providing access to data participating in interviews, etc.), the Measures of Effectiveness, the planned data collection activities, and anticipated data analyses.

Deliverables:

1.1 Evaluation Concept
1.2 Evaluation Plan (Draft and Final)

Task 2: Coordination with Agencies Deploying IWS

In Task 2, the Contractor will perform outreach and coordination to identify those agencies that currently operate or who are planning to deploy IWS that are consistent with the preliminary standards. Using the Evaluation Plan, the Contractor will explain the concept of the coordinated evaluation, and attempt to solicit the participation from as many agencies deploying IWS (consistent with the MUTCD

specifications) as possible. The Contractor will maintain a database of agencies operating the IWSs, possibly operating a web display of the locations of the devices.

Additionally, the Contractor will provide any technical input needed to the agencies deploying the IWS regarding the evaluation framework developed in the 2010 project and the data collection.

Task 2 will be an ongoing task throughout the project, with effort ramping up each time an agency is identified to be deploying an IWS.

Deliverables:

2.1 Outreach and support to agencies deploying IWS
2.2 Coordination Database and related website to track IWS deployment
2.3 Information materials to support agencies deploying IWS

Task 3: Data Collection and Analysis

In Task 3, the Contractor will perform a coordination role to gather and collect data from each state or province that is operating IWS according to the preliminary standards. While each state that deploys IWS is expected to collect local data that they would collect regardless of whether the National evaluation is being performed (i.e. typically with a safety deployment such as IWS, DOTs collect data to understand the reactions from drivers and impacts). Therefore, as part of this project, the Contractor will not execute local data collection, but rather will gather data collected by the states or provinces using any methods convenient for the agencies (e.g. downloading data from an Internet site, receiving disks of data, etc.) and enter the data into a common database used to track all IWS deployment results.

At this time, it is envisioned (pending approval from states) that a website map display could allow visitors to click on IWS deployment icons and view descriptions of the deployments and data collected to date, perhaps with analysis and results included.

The Contractor will also perform statistical analysis on the data. It is expected that the data will include multiple types of data, ranging from speed data to crash data and statistics, to even personal interviews or on-line surveys conducted by the Contractor of this project.

Once again, the value of this project is that for the first time there will be a large number of IWS deployments that all utilize a common set of preliminary standards and evaluation framework. Therefore, the comparison of systems in multiple states and provinces will be an 'apples to apples' comparison. Over the lifetime of this project, it is expected that there will be valuable statistical findings that will serve to further validate or indicate changes to the preliminary standards that can then be submitted for MUTCD consideration.

Deliverables:

3.1 Summary Report Containing Quantitative and Qualitative Data Collected

3.2 Data Analysis Report

Task 4: Final Reporting

Finally, efforts in Task 4 will prepare a Final Report summarizing the evaluation coordination, and reporting to each agency the impacts of their system and the consolidated findings from tracking the numerous IWSs. The report will also recommend further revisions to the preliminary standards in preparation for them to be submitted to the National Committee on Uniform Traffic Control Devices.

The Contractor will prepare interim findings as part of Task 4, together with a comprehensive Final Report summary at the close of the contract.

Deliverables:

4.1 Draft Final Report
4.2 Final Report

Project Schedule at the Task Level:

This project would have a schedule of 24 months. The project will ideally have a significant number of IWSs deployed and gathering data for at least 18 months. Therefore, ideally the project would start at a time when a large number of systems would be deployed within 6 months following the project onset.

Project Deliverables:

1.1 Evaluation Concept
1.2 Evaluation Plan (Draft and Final)
2.1 Outreach and support to agencies deploying IWS
2.2 Coordination Database and related website to allow tracking of IWS deployment
2.3 Information materials to support agencies deploying IWS
3.1 Summary Report Containing Quantitative and Qualitative Data Collected
3.2 Data Analysis Report
4.1 Draft Final Report
4.2 Final Report

Project Cost Detailed at the Task Level:

Task	**Estimated Cost**
Task 1: Evaluation Planning	$ 20,000
Task 2: Coordination with Agencies Deploying IWS	$ 15,000

Task 3: Data Collection and Analysis	$ 45,000
Task 4: Final Reporting	$ 15,000
Total Project Costs	**$95,000**

Relationship to Similar Activities and Projects If Known:

The ENTERPRISE Program is currently performing a project to facilitate two workshops and prepare preliminary standards and an evaluation framework for Intersection Warning Systems . This will provide specifications that agencies can use to deploy IWS in a consistent manner. This consistent deployment will 'set the stage' for a universal evaluation of the impacts, benefits, and true costs of IWS deployment. This project is the logical extension to the current 2010 ENTERPRISE IWS project.

Project Participants (Agencies):

TBD

Project Contact:

Jon Jackels, Minnesota DOT

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2012 Work Plan

2012 Project #2:
The Next Era of Traveler Information

Project Background, Summary, and Objectives:

Over the last 10 years, 511 (traveler information phone) systems 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, and/or reducing costs. Over the past two years, many DOTs have faced reductions in operating budgets, which has led to many states re-evaluating the need for and value of 511 and other traveler information services. Recently some agencies have deployed ventures to reduce operating costs (e.g. either outsourcing operations or recovering costs through sponsorship) while at the same time new and potentially lower cost opportunities to deliver traveler information have developed through the advent of social networking. It is increasingly challenging to plan, evaluate, implement, operate and adapt traveler information services because of limited resources, overwhelming information and rapidly changing dynamics.

ENTERPRISE member agencies were surveyed for their input on the scope and focus of this project. A summary of the survey results is attached at the back of this project description. The Summary and Objectives (as follows) is based on this input.

Summary of the Project:

The project will not be limited solely to 511 phone systems, but will also include Web dissemination, social media, and applications. It will attempt to understand how traveler information technology and use is changing and how the changes are impacted by current and emerging trends with dissemination mechanisms and data management practices. The project will help ENTERPRISE states articulate their goals for traveler information, develop a framework the states can use to assess new trends against their goals, and inform the states of current and emerging trends affecting traveler information. This project will assist the states with understanding and choosing courses of action related to select trends and issues immediately impacting traveler information. Feedback from the states surveyed about this project has identified the immediate trends that will be addressed. A framework document will be created for each state to establish their traveler information goals, and as the states begin to understand and make decisions around trends in relation to their individual traveler information goals, the framework will document their chosen courses of action. The framework is then intended to serve as a tool for ongoing traveler information management; something the states can reference when assessing future trends.

Objectives of the Project:

Once a framework for articulating states' traveler information goals is established, the project will identify current and emerging trends with dissemination mechanisms and data management practices. Emphasis will be placed on sharing lessons learned by agencies that have experience related to these trends and will explore legal aspects, contracting approaches, technical details, partnership models, governance and so forth. As the states are presented with information about these trends, they will be assisted with completing the framework around traveler information goals and chosen courses of action. The trends to be explored include:

- Dissemination tools. The project will facilitate an exchange of experiences with push systems and social media. Emphasis will be placed on helping members understand options for delivering information without relying on incoming phone calls, and will include recommendations on how sharing software developed by member agencies can best be achieved.
- Data management. The project will explore and address data, formatting, and legal aspects of delivering DOT data to private information service providers. There will be an emphasis on understanding how private sector providers may change the role of state DOTs in providing traveler information and understanding potential impacts of the 1201 rule-making on state traveler information systems.
- Customer needs and wants. The project will seek to understand what information travelers find most useful (e.g. tailored profiles for 511 calls) and what information might be desired but not currently available. The project will also explore benefits and drawbacks of links to live operators, either for general traveler information or when forwarding to specific sources such as transit or tourism call centers.
- Cost management. The project will identify funding approaches in order to share alternate funding approaches and clarify the costs of operating traveler information services.
- Performance targets. The project will seek to understand usage trends (i.e. in what states are 511 call volumes increasing or decreasing).

Format / Delivery of the Project:

- The project will not solely be paper deliverables, but rather will utilize webinars, web sharing tools, and invited speakers to provide timely information.
- The project will conduct literature reviews and in-person discussions with agencies and private sector partners as appropriate to capture valuable insights related to the trends that will be addressed.
- The project will conduct webinars where guest speakers are invited to share their experiences, present their findings and answer questions from ENTERPRISE member states. Webinars will be recorded, archived and available on the ENTERPRISE website. Where appropriate, ENTERPRISE states may also be asked to make presentations based on their experiences with each trend.
- The project will attempt to arrange a "software exchange" for states to share, for example, code developed for mobile applications or information preparation for social media. The ENTERPRISE website can become the foundation for this open exchange, and webinars may feature the states that have created the software to explain the use of it.

ENTERPRISE members will be assisted with developing a framework for articulating their traveler information goals and courses of action around the trends explored during this project. The framework will articulate the state's goals and as webinars or materials are delivered throughout the project, states will be assisted with documenting their desired courses of action within the framework.

Scope of Work with Task Descriptions:

This project proposes three overall tasks and later sections identify a potential 'splitting' of the project into phases.

Task 1: Information Gathering

In Task 1, the contractor will gather information related to the current and emerging trends described in the project objectives. Three key sources (as a minimum) will be referenced in Task 1:

Source #1: Public Agencies Operating Traveler Information Systems

The public agencies, some of which may include ENTERPRISE members, that are currently operating traveler information systems, especially those who are using innovative financing approaches or who have considered innovative financing approaches, will be a key source for gathering information. The AASHTO 511 program will also be contacted to assist in gathering information. The contractor will outreach to these agencies by phone and email to gather as much information as possible. Those agencies that have lessons and/or successes to share will be highlighted as case studies and documented. Key individuals from the case studies will be invited to participate in webinars as guest speakers and share their experiences.

Source #2: Private Sector Providers / Funding Partners

There are now a number of private sector vendors/contractors that are involved in the delivery of traveler information that specifically share costs or recover some costs through sponsorship and advertising. The contractor will outreach to these vendors and invite them to share their business models with the ENTERPRISE project. Depending upon the information shared, the contractor may document the feedback, arrange webinars to allow the private sector representatives to share information and interact with ENTERPRISE members, or use other methods to convey the information.

Source #3: Traveling Public

If desired by the Project Champion and participants, the contractor will conduct a web survey of travelers. The web survey will utilize a commercial web survey product (e.g. Survey Monkey) and can be linked from any web site desired. For example, ENTERPRISE member agencies (or non-member agencies) could offer a link from their traveler information website. The intent would be to gather detailed information from travelers about what features they use, what features the do not use, and what they would like to see. The survey could also present questions about travelers' reactions to things such as advertising and sponsorship. The entire survey will be reviewed by ENTERPRISE members before release, and only released if the group agrees. Secondary research may also be gathered to use as references for understanding customer wants and needs related to traveler information.

Task 1 will be ongoing throughout the duration of the project, and the core emphasis of the project is to gather the information to answer as many questions that member states have as possible. Other tasks related to documenting and sharing the information will proceed in parallel to Task 1.

Task 2: Active Project Information Exchange

Unlike other research projects that gather information, formulate decisions, and prepare written documentation to present the results, this project proposes that all of the information gathered will be shared as the project is being performed, thus allowing ENTERPRISE members to ask follow-up questions or request more details whenever appropriate. In Task 2, the contractor will create this ongoing exchange of information that is being gathered in Task 1.

The information exchange methods planned to be used in Task 2 include:

- Monthly project update 'flyer' – a monthly summary of what was accomplished and what new insight was gathered, planned to be posted to a project website with links emailed. The flyers will also update on results of the web survey;

- Regular webinars – the project team will agree to a regular schedule for monthly webinars. Topics for each webinar will be published in advance to allow interested representatives from member states to plan ahead, and will be used to invite guest speakers and/or share information gathered. The project team may also elect to conduct one or two larger webinars (planned in advance) that encourage broader participation from non-ENTERPRISE states and other organizations. The proposed webinar topics may include 1. State traveler information goals and framework introduction, 2. Dissemination tools (part 1), 3. Cost management (part 1), 4. Customer needs and wants, 5. Data management, 6. Dissemination tools (part 2), 7. Cost management (part 2), and 8. Performance targets.

The contractor will manage the information assembly and exchange to ensure that the nature of the information is about lessons learned or best practices (rather than 'selling of products or services'). For example, private sector participation will be limited to those with experiences or approaches to share with the group and will not be open for anyone who wants to present.

Task 3: State Frameworks and Final Report Preparation

While the intent of Tasks 1 and 2 is to share information regularly throughout the project and allow members to request more details when needed, the contractor will develop a state frameworks and a Final Report summarizing the project approach and findings, as well as recommendations that might relate to future actions for ENTERPRISE. Each framework will articulate the state's traveler information goals and their desired course of action related to each trend presented and discussed during the project. The Final Report is proposed to be delivered in two forms:

- Paper Delivery Form – much like other traditional reports, a version will be prepared that may be printed and/or email and will be self-contained.

- Electronic Delivery Form – The ENTERPRISE New Era of 511 electronic report will be a web-accessible document with hyperlinks throughout the document to archived webinars, weekly

flyers, web survey results, active traveler information websites, and other sources. This document may require minimal 'upkeep' to periodically test links and update them. However, given that there will be many dynamic information exchanges available this version will take advantage of these. The ENTERPRISE Program website will act as the clearing house for this project documentation.

Project Schedule at the Task Level:

This project would have a schedule of 12 months. The hours and time required to complete the tasks do not mandate 12 months, however the time is allowed to encourage information sharing, agency participation, and to ensure that there is sufficient time to outreach to and work with key sources of information (who may have busy schedules). Information sharing will begin within 1-2 weeks of the project onset, thus allowing immediate member engagement and benefits.

Defining Project Phases

Because some member agencies expressed an urgency for selected topics (e.g. use of social networking and exchanging information about 'free' services), the project is proposed to include two phases:

Phase 1 will address those topics agreed by the group at the project initiation to be most 'time sensitive' and critical to early completion. Based on survey feedback the webinars held and topics covered in this phase would include 1. State traveler information goals and framework introduction, 2. Dissemination tools (part 1), 3. Cost management (part 1).

Phase 2 will address the remaining topics, which based on survey feedback would include 4. Customer needs and wants, 5. Data management, 6. Dissemination tools (part 2), 7. Cost management (part 2), and 8. Performance targets.

The project budget presents costs for performing Phase 1 separately from Phase 2, in the event that the ENTERPRISE Board elects to initiate Phase 1 in a different Work Plan from Phase 2.

Project Deliverables:

Deliverable #1:	Written summary of current and emerging trends to be addressed and a schedule for doing so
Deliverable #2:	Interactive sharing of information (websites, webinars, presentations, flyers)
Deliverable #3:	State framework documents
Deliverable #4:	Final Report – paper and electronic versions

Project Cost Detailed at the Task Level:

Phase 1 Estimated Costs	**Estimated Cost**
Task 1: Information Gathering	$15,000
Task 2: Active Project Information Exchange	$15,000
Task 3: State Frameworks	$10,000
Phase 2: Estimated Costs	
Task 1: Information Gathering	$20,000
Task 2: Active Project Information Exchange	$20,000
Task 3: State Frameworks and Final Report Preparation	$15,000
Total Project Costs	**$95,000**

Relationship to Similar Activities and Projects If Known:

The ENTERPRISE Program has funded considerable efforts to advance 511 Traveler Information Systems. This project was regarded very highly when discussed on the April, 2011 conference call and many participants indicated the project was timely and would be beneficial.

Project Participants (Agencies):

TBD

Project Contact:

Bill Legg, Washington DOT

Proposed 511 Project Survey Results

ENTERPRISE members were surveyed to gather more specific details about the needs and concepts for this project.

Status of 511 Traveler Information Systems:

The majority of ENTERPRISE members (7 of the 9 that completed the survey) noted that they have an existing 511 phone system, but are interested in understanding any options for recovering or minimizing costs.

Dissemination Tools to be Included in the Project:

When asked if the ENTERPRISE 511 Project should focus on multiple dissemination tools (511 phone, web, social media, Apps), nearly every responder agreed the project should address all dissemination mechanisms. The following comments were included as more details:

> *"All of these, including customizable setups where drivers receive text messages when wanted with the type of roadway info desired."*
>
> *"If we don't explore all that's available, how do we learn what we're missing?"*
>
> *"I think the project needs to look at the link between 511 and all the other options listed, I am just not sure how much we can or want to investigate the universe of agency provided travel information. I would recommend that the scope speak to understanding how changes to 511 phone will impact other efforts."*

Focus of the Project:

Survey responders added insight to the focus of the project. The following are suggestions from members for the focus of the project:

- *Lessons Learned, latest technologies and innovative funding options.*
- *latest technologies, lessons learned*
- *funding options, legal aspects, latest technologies, lessons learned*
- *From our understanding, we would be most interested in learning what types of information people find useful and in what formats. For example, currently call volumes are down, but internet usage is on the rise. What is driving this? How feasible is it for someone to set up a customizable account with the info they find useful? For example, let's say I live on the coast, so I want weather data. Or if I live in Austin, I want to know road closures due to special events/construction. Can I have the ability to choose to have the system send me a text message or auto-email? Could I plug in my route to work and have the system tell me expected travel times/roadway incidents for am and pm travel times? Finally, could we develop a standard web format that is user friendly and could be applied across multiple states?*
- *Technologies (how to "push" data in order to minimize actual phone calls into the system)*

- *All of the above. I think a concern with Iowa going this route is that most of these no/low-cost solutions have been implemented in high density population areas (mainly east coast from my recollection) and Iowa is not that.*
- *Funding options and lessons learned*
- *Future trends and partnership models, governance, revenue sharing, private sector provision of 511.*
- *My question: Understanding the true cost of agency provided 511 vs the cost of some of the other alternatives. I don't think many of the efforts to change how the systems are managed or funded have good cost information, the changes seem more politically driven in an environment where there is not good cost information to add to the discussion. So it is hard to tell if there are true cost savings or if they might actually be much larger then perceived.*
- *Additional Suggestion: Data format requirements to provide data to private companies that already provide traveler information systems*
- *I would also like the project to research the advantages of traveler information systems that include options to speak to a "live human" when the automated system does not provide a satisfactory answer to the motorist.*
- *Needs/wants analysis of the motoring public. What format and what information best works for the motorist? Latest news on standards: data formats, data sharing, etc. How do we verify and measure accuracy and availability of information?*

Format of the Project and Presentation of Results:

The project proposed research, information gathering, preparation of technical memos, and webinars to share results. Responders suggested the following additions:

- *Maybe it's an idea for Enterprise to put up a Group/Discussion item at a social/professional media like Facebook/LinkedIn or whatever this could be used by the project to start "living" discussions and exchange of info around the subject to collect extra input for the project.*
- *Maybe a case study if there is one state to use as a model.*
- *These are all acceptable methods of presenting the findings. Having guest speakers on existing 511 systems explain their lessons learned would be helpful. Aim for different regions within the country and rural vs. urban.*
- *Gather and make available freely available code in support of new technologies when/where available for other DOTs at no cost (e.g., If an agency has created an automated Tweeter push and that code is freely available to other DOTs, then provide).*
- *Integrated 511 operations*
- *I think the current approach covers it.*
- *I would like this project to pursue recommended approaches/strategies/templates for state DOTs to develop systems that provide the necessary traveler information to comply with the FHWA Real-Time System Management Information Program Final Rule (23 CFR 511).*

Timeliness of the Project:

The responders commented on the timeliness of the project, and any needs for results prior to a specific deadline:

- *I think it is VERY timely but do not have any specific timeline requirements.*
- *Time is flexible.*
- *It would be nice to see this completed within a year, so identifying a realistic scope within that time frame will be important.*
- *Our agency is looking at moving to a free 511 service and it would be good to know options and pitfalls. Additionally, we cannot handle call volumes on peak days (have handled 42k calls in a day) so we are being pushed to have solutions prior to next year's storm season (e.g., Tweeting by October).*
- *Completed by Sept 2011*
- *Ideally it would be good to have something before the legislative session starts right after the first of the year (2012).*
- *Probably no later than the end of 2012 (calendar year). This is due to the planning required to implement Federal Rule 23 CFR 511 (Real Time System Management Information Program) by December 2014.*

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2012 Work Plan

2012 Project #3:
Intelligent Workzone – Synthesis of Best Practices

Project Background, Summary, and Objectives:

In recent years, the use of technologies in workzones has increased tremendously. Technologies are now owned or rented by DOTs and deployed in workzones to perform multiple roles, including: smoothing traffic, informing travelers of conditions, and monitoring travel times. The ENTERPRISE Member state Minnesota currently has an Intelligent Workzone Toolbox published on their website that contains many approaches for applications of technologies in workzones. There are numerous similar initiatives, programs, or information sources throughout North America.

The intent of this project would be to assemble all the information from various sources, and to synthesize and further research the deployment results to draw some conclusions about what approaches work best in what situations. Ultimately, this project would result in a tool that member agencies can use to identify, prioritize, and select technology deployments for various workzone situations. The approaches would be vendor independent, and would focus on the approach. Sources of information would include: the Midwest Smart Work Zone Initiative (Iowa State), the Work Zone Clearinghouse (TTI), and others.

Scope of Work with Task Descriptions:

Task 1: Definitions of Project Focus

There are many definitions for Intelligent Workzones. This project could, conceptually, include many technologies and uses of the technologies. In Task 1, the Contractor will facilitate a process to define the focus of this project. The focus may be all-inclusive of all workzone technologies and uses, or may be narrowed.

Once the Project Focus is defined, the Contractor will assemble the various technical documents available from initiatives and/or those developed by states and provinces. The Contractor will prepare a briefing document that summarizes what each document/resource is, and the content included in the document. This brief summary of available resources will be posted on-line and will allow members to click and link to any Final Reports available on-line.

The intent of Task 1 is that ENTERPRISE members understand and agree to the focus of this project, and have a resource at their fingertips that they can use to understand the current status of Intelligent Workzone activities.

Deliverables:

1.1 Project Focus Technical Memo
1.2 Summary document of Intelligent Workzone materials available

Task 2: Creating a Matrix of IWZ Approaches for Situations

In Task 2, the Contractor will conduct a conference call / webinar with ENTERPRISE member agencies to step through the document prepared in Task 1. After stepping through this document, the Contractor will facilitate a discussion to understand What Information is Still Needed to make decisions about Intelligent Workzones? While there has been a number of assessments and toolboxes created for Intelligent Workzones, the opinions of ENTERPRISE members during the Work Plan preparation was that additional details are still desired.

For the remainder of Task 2, the Contractor will research those questions identified during the webinar, and ultimately help the ENTERPRISE member states understand What 'Intelligent Workzone Approaches' work best in different situations.

One candidate approach to accomplish this will be to prepare a matrix with one axis including cells for all the possible 'Situations' where an Intelligent Workzone system might be needed (e.g. rural area with excessive speeds, rural area with extremely narrow lanes, etc.). The other axis of the matrix could be a collection of Intelligent Workzone technologies, and the cells in the matrix could be filled in to describe how the technologies are proposed to be used for each situation. This is just one example as to how this project will not be starting from scratch, but rather leveraging all the research and lessons learned to-date using Intelligent Workzones, but to build a very useful tool for members to use.

Deliverables:

2.1 Webinar (recorded and posted to ENTERPRISE website)
2.2 Matrix of IWZ Approaches for Situations

Task 3: IWZ Synthesis Final Report

In Task 3, the Contractor will summarize the findings of the project, and prepare a Final Report documenting the conclusions of the research.

Deliverables:

3.1 Draft Final Report
3.2 Final Report

Project Schedule at the Task Level:

This project would have a schedule of 6 months.

Project Deliverables:

1.1 Project Focus Technical Memo
1.2 Summary document of Intelligent Workzone materials available
2.1 Webinar (recorded and posted to ENTERPRISE website)
2.2 Matrix of IWZ Approaches for Situations
3.1 Draft Final Report
3.2 Final Report

Project Cost Detailed at the Task Level:

Task	**Estimated Cost**
Task 1: Definition of Project Focus	$ 5,000
Task 2: Creating a Matrix of IWZ Approaches	$ 25,000
Task 3: Final Report	$ 10,000
Total Project Costs	**$40,000**

Relationship to Similar Activities and Projects If Known:

Project Participants (Agencies):

TBD

Project Contact:

Mark Johnson, Texas DOT
Jon Jackels, Minnesota DOT

ENTERPRISE

2011 Work Plan

2011 Project #4:
HAR – Understanding the Best Practices and Future Direction

Project Background, Summary, and Objectives:

Highway Advisory Radio (HAR) offers a relatively low cost option for communicating with vehicles through the AM radio that is in most vehicles. HAR has been used by Departments of Transportation for many years. Early technologies often resulted in broadcasts that were hard to understand or lacked real-time information. In recent years, automated systems and new technology have provided new opportunities for real-time information dissemination.

In recent years, many transportation agencies have funded enhancements to HAR deployments, or implemented HAR together with their systems that automatically populate traveler information phone and web systems. Therefore, in some ways, HAR has had a 'comeback' in use.

The intent of this project is to research the current HAR 'state of the practice', and document how effective HAR is, and provide additional details that will allow ENTERPRISE members to make decisions about whether or not to invest (or continue investing) in HAR technologies. Specifically, the project will attempt to answer questions such as:

1. What is the actual use of HAR (have any states/provinces conducted a thorough evaluation of the use)?
2. How successful are static signs with flashing lights "Tune to __ when flashing", or are Dynamic signs with alert messages only when critical information is on the HAR more effective?
3. What type of information is better conveyed on HAR vs. DMS?
4. Have the ENTERPRISE Warrants for HAR been used by any agencies? Are the warrants appropriate?

Scope of Work with Task Descriptions:

Task 1: Literature Review – Synthesis of Research to Date

In Task 1, the Contractor will conduct a literature review of any evaluations, cost/benefit analyses, and documented assessments of HAR systems throughout the world. The intent of the literature review will be to synthesize together any previous research or studies that document the current best practices for HAR.

The literature review and synthesis will summarize HAR research in a brief technical memorandum, with an emphasis on linking readers to the full reports.

Deliverables:

1.1 Synthesis of HAR Research and Assessments

Task 2: Current HAR Status Information Gathering

In Task 2, the Contractor will conduct a process to gather input from as many states/provinces as possible regarding their current use of HAR and/or interest in the use of HAR. Specifically, the following activities are proposed:

- The Contractor will develop a comprehensive list of questions that (ideally) this project would answer. The Contractor will circulate this list of questions with ENTERPRISE members and gain consensus on the final list such that it meets all the needs of member agencies;
- The Contractor will conduct telephone interviews with those agencies currently operating HAR systems (as many as can be identified) to step through the set of questions developed, and generally gather as much information as possible from those agencies operating HAR;
- While conducting the telephone interviews, the Contractor will identify as those agencies that would benefit the project if they participated in an on-line webinar. The intent would be to conduct a small number of project webinars where agencies operating HAR could present their experiences (both good and bad) and allow the ENTERPRISE members to ask questions and gather more detailed feedback than is possible through simply documenting a telephone interview. The webinars might be arranged around particular topics (e.g. HAR for construction, HAR for incidents and driving conditions etc.).
- If agreed by the members, the Contractor could perform an on-line survey of travelers. The on-line survey could be operated and state and provincial DOT's could post a link to the survey, inviting travelers to offer their input to the value of HAR.

In summary, Task 2 will go beyond the literature review in Task 1 to gather as much insight as possible into the value and the best practices of HAR.

Deliverables:

2.1 Webinars on specific HAR subjects (recorded and posted to ENTERPRISE website)
2.2 Technical Memorandums summarizing specific topics researched

Task 3: HAR Best Practices Final Report

In Task 3, the Contractor will prepare a document that summarizes the best practices of HAR. While the document will exist in paper format, the nature of HAR (with recordings played to travelers) might lend itself to this Final Report begin an on-line document that when read includes links to audio files and

webinar clips that explain details. Therefore, an electronic report that allows readers to experience first-hand examples of what has worked and what has not work is proposed.

Deliverables:

3.1 Draft Final Report
3.2 Final Report

Project Schedule at the Task Level:

This project would have a schedule of 12 months.

Project Deliverables:

1.1 Synthesis of HAR Research and Assessments
2.1 Webinars on specific HAR subjects (recorded and posted to ENTERPRISE website)
2.2 Technical Memorandums summarizing specific topics researched
3.1 Draft Final Report
3.2 Final Report

Project Cost Detailed at the Task Level:

Task	**Estimated Cost**
Task 1: Literature Review – Synthesis of Research to Date	$ 5,000
Task 2: Current HAR Status Information Gathering	$ 30,000
Task 3: Final Report	$ 15,000
Total Project Costs	**$50,000**

Relationship to Similar Activities and Projects If Known:

The ENTERPRISE Program has funded several projects related to HAR and radio broadcast tower specifications. In addition, travel information has always been a topic of interest to member agencies. Currently, several ENTERPRISE members are considering HAR deployments or have recently deployed HAR systems. Therefore, this project is very timely.

Project Participants (Agencies):

TBD

Project Contact:

Mark Johnson, Texas DOT
Bill Legg, Washington State DOT