ENTERPRISE Transportation Pooled Fund Study TPF-5 (231)

ENTERPRISE

FY 2016 Work Plan

FINAL

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 has approved a number of work plans since its inception in 1991 and completed numerous projects. Each project has followed the vision of ENTERPRISE which defines the program's global view of highway travel. ENTERPRISE 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 members contribute $30,000 or more annually to the pooled fund and are reimbursed for program travel. In FY 2016 (October 1, 2015 through September 30, 2016), 11 member agencies are anticipated to contribute financially to the projects included in this work plan.

Projects

During 2015 member agencies submitted project ideas for this FY 2016 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 2015 Executive Board meeting as projects for the FY 2016 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 approved projects.

Table 1: FY 2016 Work Plan Funding Plan

Expense	Estimated Costs
2016 Projects	
Project 1: ENTERPRISE Lead State Administration	$25,000
Project 2: Peer Exchange Webinar	$30,000
Project 3: Decision Support for Phasing Out Legacy ITS Systems and Devices	$75,000
Project 4: Portable Travel Time Displays and Traffic Assessment – Phase 2	$70,000
Project 5: National Clearance Data Hub	$35,000
Program Administration Support and Members Travel (two in person meetings)	$140,000
Other expenses	$3,000
Revenue	**Estimated Revenue**
Project Specific Contributions from Members - Ontario MTO	$25,000
Member Annual Contributions 9 members x $30,000 • Georgia DOT, Illinois DOT, Iowa DOT, Minnesota DOT, Oklahoma DOT, Pennsylvania DOT, Texas DOT, Washington State DOT, Ontario MTO 1 member x $50,000 • Kansas DOT 1 member x $35,000 • Michigan DOT	$355,000
Total (Expenses vs. Revenue)	**$378,000** **$380,000**

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

2016 Project #1
ENTERPRISE Lead State Administration

Project Background, Summary and Objectives

The lead administering state agency for the ENTERPRISE Pooled Fund study has rotated through four state Departments of Transportation (DOT) since its inception in 1991. Arizona DOT was the first Program Administration state, Colorado DOT was the second Program Administration state and Iowa DOT was the third Program Administration state. ENTERPRISE Program Administration is currently performed by the Michigan DOT.

The administering state performs a number of functions for the pooled fund, including:

- Tracking the pooled fund project budget
- Tracking and managing funding contributions from member states
- Completing quarterly reports and submitting them to FHWA
- Annual member solicitation
- Creating and executing contracts for program management and technical services

Because the lead state agency is responsible for a number of key administrative functions that are critical to the success of the ENTERPRISE program, it is important to document the responsibilities performed by the lead agency. In addition, when a new lead state agency begins to administer the program, documentation of transition steps will be beneficial to assist with the transition.

The purpose of this project is to document the administrative responsibilities to manage the ENTERPRISE Pooled Fund and create steps to ease transition responsibilities during a lead state change.

Scope of Work with Task Descriptions

Task 1: FHWA Transportation Pooled Fund Study Requirements

The Transportation Pooled Fund Program is sponsored by FHWA. This task will explore and document the requirements for a state agency to lead a pooled fund as well as define the process for closing out a pooled fund in one state and opening the solicitation with another state. The FHWA Transportation Pooled Fund Manager will be contacted and interviewed to collect relevant information about requirements and processes.

There may also be options for other agencies (e.g. FHWA) to administer a study. This task will document the process and requirements for other agencies to administer a pooled fund. In addition, the program management support and technical support provided to the lead agency administering the pooled fund will be document for each option.

Task 2: Current ENTERPRISE Pooled Fund Administering Responsibilities

This task will document the responsibilities of the lead administering state by interviewing the administering representative and research services staff at Michigan DOT who currently perform administrative responsibilities as the ENTERPRISE lead state agency and summarizing the responsibilities of all individuals involved in administering the pooled fund including managing contracts and tracking budgets.

Task 2 will also document the ENTERPRISE program and technical support consultant responsibilities including maintenance documentation for the ENTERPRISE program website.

Task 3: ENTERPRISE Member Interviews

In Task 3 each ENTERPRISE member will be contacted to identify how many pooled fund studies each agency leads as well as participates in. Based on the information gathered, selected agencies will be interviewed to document their processes and procedures for managing and participating in the pooled fund to determine whether actions differ from state to state. In addition, information will be collected to document experiences, if any, with transitioning responsibilities from one lead state agency to another.

An interview will also be conducted with Iowa DOT to document the most recent transition of the pooled fund from Iowa DOT to Michigan DOT.

Task 4: Pooled Fund Administration Responsibilities and Transition Document

Based on the information collected in Task 1, Task 2, and Task 3, a summary document will be developed to outline FHWA Transportation Pooled Fund Study requirements, identify current ENTERPRISE Pooled Fund administering responsibilities, summarize interviews, and define steps for transitioning the pooled fund from state to state. This will include documenting the overall steps to follow as well as identifying steps for each responsibility.

Project Schedule at the Task Level

It is anticipated that the project will be completed in 6 months.

Task	Month
Task 1: FHWA Transportation Pooled Fund Study Requirements	Month 1-2
Task 2 Current ENTERPRISE Pooled Fund Administering Responsibilities	Month 3-5
Task 3: ENTERPRISE Member Interviews	Month 3-5
Task 4: Pooled Fund Administration Responsibilities and Transition Document	Month 4-6

Project Deliverables

Deliverable 1 – Pooled Fund Administration and Transition Document

Project Cost

Deliverables	Cost
Deliverable 1 – Pooled Fund Administration and Transition Document	$25,000
Total Cost	**$25,000**

Relationship to Similar Activities and Projects if Known: None known.

Project Champions: Lee Nederveld and Cory Johnson

Project Participants (Agencies): TBD

2016 Project #2
Peer Exchange Webinars

Project Background, Summary and Objectives

ENTERPRISE members have continuously identified peer exchange opportunities as an important member benefit of the program. Learning from others without duplicating efforts is an important focus for the members. Peer exchange opportunities occur each year at in-person meetings, during selected project meetings, as well as during monthly calls held by the members. Topic-focused exchanges such as peer exchange webinars offer the opportunity for in-depth information sharing and engage staff within the member agencies to learn from others.

This project will conduct 3 webinars to share information on member-identified topics of interest.

Scope of Work with Task Descriptions

Task 1: Identify and Research the Topics

In Task 1, topics of interest for peer exchange meetings will be identified. This may include interviewing or surveying ENTERPRISE member states to identify best practices to share or to identify other transportation agencies that should be invited to share information on a chosen topic. (Spot pavement sensors has been identified as one topic of interest by the ENTERPRISE members and would likely be the topic of one of the three webinars.) Research on topics to gather initial background information may also be conducted.

Topics of interest by the ENTERPRISE members include:

- Texas DOT DMS Sponsorship
- Spot pavement sensors
- Oregon DOT Bluetooth Travel Times System
- Truck Rollover Warning Systems Best Practices*
- Dynamic Real Time Warning Systems*

**NOTE: These topics of interest were included as projects in previous work plans, however due to project prioritization the ENTERPRISE members agreed to consider these topics as a peer exchange ideas and not conduct an entire project as outlined in the previous work plans.*

Task 2: Identify Presenters and Conduct Webinars
Based on the information gathered in Task 1, a schedule will be developed to outline a suggested plan for conducting each webinar. DOTs to highlight will be identified for each topic as well as suggested presenters.

Once the topics from Task 1 and the presenters are identified, meeting logistics will be prepared. This will include working with presenters prior to the webinar to develop agendas and presentation topics and to practice with the webinar technology. This will also include preparing and distributing webinar announcements and facilitating the peer exchange during the webinar event.

Task 3: Summarize Peer Exchange Webinars
Upon conclusion of each webinar, a brief document will be prepared summarizing the webinar. The webinar summary, webinar recording, and presentation slides for each webinar will be posted to the ENTERPRISE website.

Project Schedule at the Task Level

It is anticipated that the project will be completed in 12 months.

Task	Month
Task 1: Identify and Research the Topics	Month 1-3
Task 2: Identify Presenters and Conduct Webinars	Month 3-12
Task 3: Summarize Peer Exchange Webinars	Month 3-12

Project Deliverables

Deliverable 1 – Peer Exchange Summary #1
Deliverable 2 – Peer Exchange Summary #2
Deliverable 3 – Peer Exchange Summary #3

Project Cost

Deliverables	Cost
Deliverable 1 – Peer Exchange Summary #1	$10,000
Deliverable 2 – Peer Exchange Summary #2	$10,000
Deliverable 3 – Peer Exchange Summary #3	$10,000
Total Cost	**$30,000**

Relationship to Similar Activities and Projects if Known: None known.

Project Champion: Cory Johnson

Project Participants (Agencies): TBD

2016 Project #3
Decision Support for Phasing Out Legacy ITS Systems and Devices

Project Background, Summary and Objectives

Many states have implemented and deployed numerous ITS devices throughout their state. In some cases, these ITS devices and systems have been in place for more than 20 years. As technology changes, it is important for agencies to evaluate the use and locations of these ITS systems and devices to determine if the need for the system or device has changed, whether the device should be repaired or replaced, and whether it is wise to continue operating it.

The purpose of this project is to conduct research to identify and document processes to determine when certain types of legacy systems/devices are no longer needed and should stop being deployed or maintained. One example is Highway Advisory Radio (HAR) transmitters. Prior to 511 phone systems and mobile websites, HARs were one of the few mechanisms for DOTs to communicate with motorist's en-route. However, now there are several technical options that work in most locations which are used more often by travelers. Therefore, state DOTs question the continued need for HAR and other types of ITS equipment. HAR is just one example; there are other devices and systems that may not be critical as new technologies are introduced. This project will research and document the lessons learned about the processes to make decisions regarding continuing (or discontinuing) ITS systems and devices. It is important to note that the project will also explore processes for assessing when DOT functions may be accomplished by hiring a contractor or 3rd party information service provider to perform the function rather than requiring the DOT to continue to invest in owning software or systems. An example of this is the use of third-party speed data in lieu of deploying/maintaining vehicle detectors.

Scope of Work with Task Descriptions

Task 1: Create a Project Team

In Task 1, a project team will be created. Members of the project team will include ENTERPRISE member representatives as well as others in their DOTs (ITS professionals, traffic management center staff, staff with experience determining life cycle costs and economic decision-making).

Task 2: Literature Search

The first step in Task 2 will be to conduct an online literature search to identify whether any DOTs have evaluated and documented the need for continued use of legacy ITS systems/devices. Industries outside of transportation may also be explored to determine whether practices exist to recognize when systems or technologies should be phased out.

Task 3: DOT Interviews

Pennsylvania is currently exploring the need for maintaining / phasing out HARs and 511 voice. Iowa DOT is researching replacement of permanent HAR locations with portable systems for use in disastrous situations (e.g., floods, tornadoes). Iowa also recently completed a report that evaluated how traveler information is used in Iowa. This evaluation, in addition to other sources of information such as 511 phone use and Google analytics, is being used to make decisions.

In Task 3, ENTERPRISE member states (or other transportation agencies as needed) will be interviewed to document the process used to phase out an ITS system or device as well as whether a state has hired a contractor to continue operating ITS systems or devices and the reasons for doing so. A questionnaire will be developed with input from the project team to ensure the information gathered is relevant and benefits members.

Task 4: Documentation and Analysis Support for DOTs Phasing out a System or Device

In Task 3, the process used by different transportation agencies to phase out an ITS system or device will be documented. This information will then be used as a basis for this task (Task 4) to assist up to 3 ENTERPRISE member states that are considering phasing out a system or device with gathering information to support their decision. Information documented may include the following

- Costs (per device, total cost, maintenance cost, etc.)
- Any existing alternatives for the device/system
- Agency's need for the device/system
- Usage by motorists
- Pros/cons to phasing out the device/system

Information will also be gathered from DOT experts including those who operate the devices to provide input on processes that could be used to help determine when to sunset a system.

Task 5: Webinar

In Task 5, a webinar will be conducted for states to share information gathered in Tasks 3 and 4. During the webinar, states will work together to collectively identify commonalities and decision factors with support from the project contractor. The information discussed will be documented.

Task 6: Summary Report

Information from Tasks 1, 2 3, 4 and 5 will be documented in a summary report during Task 6. The summary report will also include recommendations and suggested processes for ENTERPRISE members to use as they evaluate their need and consider maintaining/transitioning out legacy ITS systems and devices. The recommendations will be based on the information documented in the previous tasks.

Project Schedule at the Task Level

It is anticipated that the project will be completed in 12 months.

Task	Month
Task 1: Create a Project Team	Month 1
Task 2: Literature Search	Month 1-2
Task 3: DOT Interviews	Month 2-6
Task 4: Documentation and Analysis Support for DOTs Phasing out a System or Device	Month 6-9
Task 5: Webinar	Month 10
Task 6: Summary Report	Month 9-12

Project Deliverables

Deliverable 1 – Literature Search and DOT Interviews Summary
Deliverable 2 – Summary Report

Project Cost

Deliverables	Cost
Deliverable 1 – Literature Search and DOT Interviews Summary	$20,000
Deliverable 2 – Summary Report	$55,000
Total Cost	**$75,000**

Relationship to Similar Activities and Projects if Known: None known.

Project Champion: Doug Tomlinson

Project Participants (Agencies): TBD

2016 Project #4
Portable Travel Time Displays and Traffic Assessment – Phase 2

Project Background, Summary and Objectives

State DOTs have found that displaying travel time messages on Dynamic Message Signs (DMS) can be an effective mechanism for informing travelers about expected delays along their routes. An earlier ENTERPRISE project completed in 2012 titled Assessing the Impacts of Travel Times on the Overall Network concluded that displaying travel times approximately twice as long as normal travel times during that time of day will influence a sizeable percentage of travelers to divert to alternate routes when available. The display of travel times on DMS is not only intended to create diversions. Anecdotal feedback suggests that travelers appreciate knowing their travel time as it reduces stress.

One finding of the Assessing the Impacts of Travel Times on the Overall Network project was that the rate of diversions when longer than normal travel times are posted varies by location, most likely heavily influenced by the availability of alternate routes and the general travel patterns of traffic. Therefore, a state DOT could not predict the impact that the deployment of travel time monitoring and DMS display will have at any location, and state DOTs could invest considerable funding at one location only to find that the impact on traffic delays is not recognized.

The ENTERPRISE project "Portable Travel Time Displays and Integrated Corridor Management with Parallel Routes – Phase 1" will be completed separately and will conduct systems engineering and partnership building to prepare for this Phase 2 deployment. ***The effort of Phase 2 would procure and deploy temporary portable systems to detect travel time and the percent of vehicles diverting to alternate routes, coupled with a portable DMS display to inform travelers of the travel times. The goal of the temporary deployment is to determine whether vehicles will divert and reduce the congestion level, allowing DOTs to make informed decisions about investing in permanent systems.*** If successful, this effort would prove that a portable system (consisting of Bluetooth readers, portable DMS, communications, and processing) could be deployed when state DOTs wish to assess the impacts that displaying travel times on a DMS would have on a stretch of highway experiencing recurring congestion.

A potential Phase 3 for the project will be determined at the conclusion of Phase 2. A possible Phase 3 could focus on investigating the impacts that proactive arterial signal timing changes could have when integrated with travel time notification. For example, if a travel time message is displaying a travel time more than twice the normal time and traffic is expected to divert, signal timing plans to 'flush' the diverted traffic along parallel arterials could be implemented. However, the decision to implement local signal changes is not governed solely by the need to provide alternate parallel routes. Instead, there are

local institutional issues and priorities of the local roads that all must be considered. This is a critical part of the Integrated Corridor Management (ICM) initiative.

Scope of Work with Task Descriptions

Project tasks for this Phase 2 project will be determined at the completion of Phase 1. The scope of Phase 2 may include coordinating test site(s); collecting travel time display data before, during, and after the deployment; and analyzing the data collected to determine impacts. The purpose of the data collection and analysis is to determine if displaying travel time(s) has an impact on how many vehicles divert and/or an impact on the travel times (i.e. has displaying the travel time caused travelers to seek alternate routes and reduce the congestion levels) as well as to determine whether a temporary travel time display will have long term impacts.

Project Schedule at the Task Level

To be determined at the completion of Phase 1.

Project Deliverables

To be determined at the completion of Phase 1.

Project Cost

$70,000

Relationship to Similar Activities and Projects if Known

- ENTERPRISE Portable Travel Time Displays and Traffic Assessment – Phase 1

Project Champion: Dennis Tessarolo

Project Participants (Agencies): To be determined at the completion of Phase 1.

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2016 Project #5
National Clearance Data Hub

Project Background, Summary and Objectives

Damage to roadway bridges due to strikes by over-height vehicles is a concern to many transportation agencies across the United States. In response to the 2013 Skagit River Bridge collapse, Washington State DOT recently collected bridge height clearance data for the entire state and made the information available as an Application Program Interface (API) to help truck drivers plot their routes to avoid bridge strikes (http://www.wsdot.wa.gov/News/2015/01/15_newbridgemappingtool.htm). ***The purpose of this project is to research potential issues and strategies for implementing a national data hub for over-height vehicles based on each state's oversize clearance data.*** The project will be conducted in two phases. This first phase will identify whether it is possible to make bridge clearance data available from ENTERPRISE member states to determine the interest in a national clearance data hub. If there is interest based on the information in Phase 1, a scope of work will be developed for Phase 2. The second phase of the project may also explore whether there is interest from commercial vehicle carriers in a national date hub and their formatting needs. Application developers (e.g. in-vehicle navigation, V2I, etc.) may also be contacted in Phase 2 to determine interest in accessing this type of data and disseminating it to commercial vehicle carriers.

Scope of Work with Task Descriptions

Task 1: Literature Search

In Task 1, an online literature search will be conducted to document the extent of the problem involving damage to roadway bridges due to strikes by over-height vehicles. The search will also include documenting other available tools, in addition to the Washington example, to assist in avoiding bridge strikes.

Washington State DOT will be contacted in this task to report the current usage (e.g. web hits) of their bridge height clearance website, provide any feedback received from the commercial vehicle operations industry regarding the usefulness of the site, and document the process and effort that was required to create the database of information.

Task 2: Survey

In Task 2, a survey will be developed and distributed to ENTERPRISE member agencies. Survey questions may include:

- What is the format of bridge height clearance data?

- How often is the data updated?
- How accurate is the data?
- How accessible is the data for electronic publication and willingness to publish the data?
- Interest in implementing a national clearance data hub to share this data?

Other survey questions will be determined with input from the ENTERPRISE Board and information gathered in Task 1. If needed, follow up calls may be conducted with selected survey respondents to gather additional information or clarify survey results. For example, Iowa DOT operates an automated permitting system. Additional follow up may be need to document the data types used to create permitted routes in Iowa based on the truck.

Task 3: Summary Report

In Task 3, a report will be developed to summarize the information gathered in Tasks 1 and 2. The summary report will also include recommendations on steps to move forward with a national clearance data hub for Phase 2 if it is of interest to the ENTERPRISE members.

Project Schedule at the Task Level

It is anticipated that the project will be completed in 9 months.

Task	Month
Task 1: Literature Search	Month 1-2
Task 2: Survey	Month 3-6
Task 3: Summary Report	Month 6-9

Project Deliverables

Deliverable 1 – Summary Report

Project Cost

Deliverables	Cost
Deliverable 1 – Summary Report	$35,000
Total Cost	**$35,000**

Relationship to Similar Activities and Projects if Known: None known.

Project Champion: Sinclair Stolle and Bill Legg

Project Participants (Agencies): TBD