

## About ENTERPRISE

### *Evaluating New Technologies for Road Program Initiatives in Safety and Efficiency*

Created in 1991 when ITS technologies were early in their development, the ENTERPRISE pooled fund has been a consistent leader in the development and application of ITS innovations. Numerous state DOT and Canadian transportation organizations have collaborated through ENTERPRISE for a quarter century to produce more than 70 research products advancing the highway operations strategies of member agencies and the entire transportation community. The lead state for the current pooled fund study, [TPF-5\(359\)](#), is the Michigan Department of Transportation.

## Benefits of Membership

ENTERPRISE addresses traffic operations challenges both by sharing members' ITS solutions and by conducting practitioner-oriented research. Partner agencies meet in person twice each year (travel expenses paid by the pooled fund) to identify needs, scope research projects and view the latest ITS deployments around the country.

Partners allow research to progress in tune with emerging needs and newly available technologies, always with an eye to integrating effective solutions into day-to-day operations.

## Become Part of a Future-Oriented Program

ENTERPRISE membership (\$30,000 contribution per year) is open to federal, state and local transportation agencies. Current members include:

- Illinois DOT
- Iowa DOT
- Kansas DOT
- Michigan DOT
- Minnesota DOT
- Ontario Ministry of Transportation
- Pennsylvania DOT
- Texas DOT
- FHWA

For more information on planned research, activities and upcoming meetings, or to join the pooled fund, contact ENTERPRISE Chair Cory Johnson, Minnesota DOT, at [coryj.johnson@state.mn.us](mailto:coryj.johnson@state.mn.us).

## Upcoming Research Projects

*(These five projects will be followed by six more in 2019.)*

### *Evolution of ITS in Asset Management*

Researchers will gather current practices among state and local transportation agencies for identifying and categorizing ITS devices in terms of location, function, condition, ownership and other attributes. The project will identify the asset management systems in use, or capable of being used, for ITS devices.

### *Phasing Out Legacy ITS Systems and Devices*

In this project, researchers will develop approaches, methods, criteria and tools for identifying, phasing out or repurposing ITS devices and systems that are no longer needed or effective for their intended purpose. These might include obsolete devices or parts of 511 traveler information systems that are no longer needed or desired by the public.

### *Real-Time Integration of Arrow Board Messages into Traveler Information Systems: Phase III*

Building on two previous ENTERPRISE projects that developed a concept of operations and system requirements (Phase I), and installed and demonstrated a test system (Phase II), Phase III



will evaluate systems deployed in Minnesota and other states.

### *Update of Rural Intersection Conflict Warning System (RICWS) Materials Developed in Phases I, II and III*

Using the results of three previous ENTERPRISE projects, researchers will identify issues associated with development and deployment of next-generation approaches to RICWS, including technology, design, construction, operation, maintenance, standards and public outreach.

### *ITS Infrastructure Integration into Digital Mobility as a Service (MaaS)*

This project will identify the ITS devices and systems that may be impacted by or contribute to developing systems for connected and automated vehicles. Researchers will explore common goals, uses and opportunities for transportation agencies to pursue in connection with digital MaaS.

# 2017 ENTERPRISE Completed Projects

Final Reports available at: [http://enterprise.prog.org/projects\\_completed.html](http://enterprise.prog.org/projects_completed.html)

## Real-Time Integration of Arrow Board Messages into Traveler Information Systems: Phase I

ENTERPRISE members collaborated to develop an ITS solution that integrated active work zone lane closure notifications from arrow boards into agency traveler information dissemination systems. The model concept of operations and model requirements documents developed in this phase can be used by ENTERPRISE agencies to implement real-time integration of arrow board messages. Project results also enabled arrow board manufacturers and third-party integrators to develop systems that are flexible enough to meet the various needs of multiple agencies.

## Real-Time Integration of Arrow Board Messages into Traveler Information Systems: Phase II

The second phase of this project produced an evaluation plan that examined variations in possible deployments, provided objectives for system evaluation, and offered details on data collection and measuring effectiveness once the system is deployed. The evaluation plan will be used to guide future evaluations of one or more pilot deployments conducted by ENTERPRISE agencies in Phase III.

## Automated/Assisted Classification of Winter Road Conditions: Phase I

One of the most significant challenges with providing travelers reports on winter road conditions is the collection of information for such reports. Classifying winter road conditions for operations and traveler information is sometimes a manual exercise that relies on staff observations while performing maintenance activities. These subjective reports can result in inconsistent and outdated weather reporting that are of less value to travelers. In the first phase of this multiphase project, ENTERPRISE examined the state of practice to automate or assist with the classification of winter road conditions to provide traveler information.

## Model ATMS Concept of Operations and Requirements

An Advanced Traffic Management System (ATMS) is typically used to monitor conditions through the use of detectors, cameras and third-party data, and manage traffic through the use of dynamic message signs, lane use signs and ramp metering. The Model ATMS Concept of Operations developed in this project describes a baseline of common capabilities that can be used by member agencies to support ATMS procurement and verify that a deployed ATMS meets required specifications.

## Assess Speed Data for Traffic Management

Probe data generated by fleet vehicles and travelers themselves is being aggregated by third-party data providers and offered to agencies as comprehensive, real-time speed data. Researchers gathered information from agencies using this third-party data in real-time traffic operations, and the benefits, challenges and potential solutions to the challenges associated with this practice. The project also examined the methods used to combine speed and sensor data, and considered the potential for speed data to supplement a more limited deployment of sensors for collection of volume data.

## Demonstrate and Evaluate Communications to Support Rural ITS: Phase II

Phase I of this research outlined an initiative to identify, demonstrate and evaluate one or more emerging communication technologies that could be used by transportation agencies to communicate with ITS devices in rural areas. Phase II included two research efforts:

- Evaluating commercially available products for transferring full motion video via cellular networks using a temporary test deployment coordinated by Iowa DOT and North Dakota DOT.
- Exploring potential solutions for checking the operability status of ITS devices from a remote location through an examination of DOT practices and the products used by the utilities industry.

