Pooling Our Research: Accelerating the Development of Intelligent Transportation Systems

Why a Pooled Fund Study?
As populations expand, traffic congestion is increasingly a problem, reducing the efficiency of transportation infrastructure and increasing travel time, air pollution and fuel consumption. States are increasingly looking to intelligent transportation systems as a solution; ITS involves information and communication technologies for managing transportation infrastructure, and includes everything from car navigation systems and variable message signs to the integration of weather information and other data.

To accelerate the implementation of ITS programs and establish a more efficient, collaborative use of resources, Minnesota joined with several other states in 1991 to form the ENTERPRISE program. As the longest running pooled fund study in the Federal Highway Administration’s history, this program has since grown into a multinational consortium dedicated to the advancement of ITS.

What is the Pooled Fund Study’s Goal?
The goal of the ENTERPRISE pooled fund study is to provide an international forum for facilitating collaborative research and the rapid development and deployment of ITS.

What Have We Learned?
Mn/DOT has benefited from the ENTERPRISE pooled fund study’s nearly 50 completed projects by being able to jointly develop new approaches to ITS that the state would not have been able to develop alone. One of the most significant ENTERPRISE projects for Minnesota was the 511 Traveler Information Implementation, which assisted states in deploying services that allow travelers to access information about road conditions, traffic incidents, commercial vehicle restrictions and weather information simply by dialing “511.” Before project implementation began in 2001, there were more than 300 telephone numbers for travel information systems nationwide. Minnesota has also benefited from many other ENTERPRISE initiatives, including these recently completed projects:

- **Rural Renewable Power**, in which Minnesota researchers explored the use of solar and wind energy to power ITS devices in remote areas where power is not readily available. Researchers developed a prototype renewable power station integrating a small wind turbine and a photovoltaic solar panel. This technology could save significant costs by eliminating the need to extend utility power lines to rural locations.
- **ITS Warrants**, which established an efficient method for determining whether an ITS technology would provide a cost-effective solution to a given problem.
- **Rural Transit Technology**, which provided a means of evaluating the costs and benefits of applying ITS to rural transit systems.

What’s Going On Now?
Ongoing investigations into a wide range of technologies and their applications include:

- **Low-Cost ITS Safety Solution Systems**, which is exploring the use of intersection

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Road and weather information systems can supply data in real time to dynamic signs and variable speed limit systems.
warning systems, intersection collision avoidance systems and dynamic curve warning systems to address run-off-road crashes.

- Impacts of Travel Information on the Overall Network, which is addressing the impacts of travel information dissemination on driver behavior within an urban transportation network so that changes in traffic patterns can be managed accordingly.

- Next Generation Traffic Data and Incident Detection from Video, which is exploring the advantages of 3-D vector-based objection recognition for capturing traffic data and incident detection as well as warning drivers of the presence of wildlife.

**What's Next?**

Individual agency and ENTERPRISE program projects selected for 2011 include:

- Understanding Utilization of Third-Party Travel Data and Information, which will document the value of and possible uses for data feeds provided to states by various private sector travel information vendors. A separate project will evaluate whether member agencies wish to receive the OnStar data feed for emergency response or for travel information.

- Concept of Operation for Integration of IntelliDrive Data, which will examine opportunities for state DOTs to use IntelliDrive data to improve highway operations such as incident detection and management, traffic management, emergency medical services dispatch and 511 traveler information updating.

- Interpretable Travel Information—Use and Impacts, which will investigate the effect upon travelers of providing interpretable information, including traffic, incident and weather reports; video or still-camera images; and displays of weather monitoring station data.

- Optimization of Renewable Energy for ITS, which will develop a Web-based system to optimize the combined use of solar and wind power energy for ITS devices such as CCTV, vehicle detectors and variable message signs.

As ENTERPRISE continues its work for years to come, Minnesota will benefit from the latest technologies for increasing highway safety and efficiency, reducing congestion and the environmental impacts of travel, and increasing its comfort and convenience.

*This Technical Summary pertains to the ongoing Pooled Fund SPR-3(020), IVHS Study (ENTERPRISE), which will continue under TPF-5(231). Details of this effort can be found at http://pooledfund.org/projectdetails.asp?id=159&status=6, http://www.pooledfund.org/projectdetails.asp?id=459&status=4 and http://www.enterprise.prog.org/**

For more than 25 years, FHWA’s Transportation Pooled Fund Program has been providing state DOTs and other organizations the opportunity to collaborate in solving transportation-related problems. The TPF Program is focused on leveraging limited funds, avoiding duplication of effort, undertaking large-scale projects and achieving broader dissemination of results on issues of regional and national interest.