# Can You See Us Now?

**SEPTEMBER 2011** 

### **Coming Efficiencies Can Magnify Benefits of SHRP 2 Products**

SHRP 2's mission is to advance innovative methods to plan, renew, operate, and increase safety of the nation's highway system. The program's most distinctive feature is the strategic approach it brings to developing innovations that transportation agencies and their partners can apply as they address increasingly complex challenges. The strategic approach focuses energy and resources on a small number of large problems confronting transportation agencies. The problems are taken apart and attention is directed to those components that will yield to research. This strategic deconstruction is revealing new trails through familiar territory; they lead to new efficiencies that can move innovation into everyday use.

More than 100 products will develop from the research. Carrying the strategic approach forward as research products become tools and resources can magnify the benefits of each and power real advances in reducing crashes and congestion and renewing our highway system. Congress authorized the second Strategic Highway Research Program in August 2005 as a shortterm program to target these critical issues.

#### The Current Picture

Progress in 2011 is more visible than in earlier years when activity necessarily focused on planning, contracting, and project management. Now, with more than 100 contracts active or completed, the action is more obvious, for example: 50 pilot tests and field demonstrations have been undertaken in 24 states, 35 documents are published, data are being collected from nearly 1000 cars in the naturalistic driving study, and five invitational work sessions have been held to help prepare for implementation of SHRP 2 products.

In addition, our partners at FHWA, AASHTO, and NHTSA are actively engaged in planning their roles in integrating SHRP 2 products into the array of resources needed to strengthen the highway transportation system that supports our economy. These early and ongoing collaborations will be the basis for continued product development and successful implementation.

SHRP 2 is also gaining visibility in the wider world as it coordinates with highway research institutions, primarily in Canada, Europe, East Asia, and Australia, to exchange information, avoid duplication of effort, and look for contributions useful to the program. This year, SHRP 2 and the Forum of European Highway Research Laboratories held a second joint workshop at the TRB Annual Meeting; one SHRP 2 staff member serves as an advisor to a naturalistic driving study sponsored by the European Union and another is working with a European effort to study and improve travel time reliability; a small delegation of SHRP 2 staff and researchers partici-



pated in a technical exchange meeting in Beijing at the invitation of the Research Institute of Highways of the Chinese Ministry of Transportation. News of SHRP 2 research is also found in journals and newsletters in Canada, France, the Netherlands, and across the European Union thanks to the efforts of our visiting professionals whose home organizations sponsor their time at SHRP 2.

# **Project Highlights**

To meet its charge, SHRP 2 is conducting research in four focus areas. Highlights in each area are mentioned in the following focus area updates.

#### Safety

Volunteer drivers in six US states are pioneering new territory as they participate in the largest study of driving behavior ever conducted. We know that driving behavior is the primary cause of crashes. Now, for the first time, technologies can be combined to gather objective, scientific information about what happens when people crash, when they experience a near-crash, and when they drive without incident. What scientists and engineers learn from the volunteers and the sensors in their cars will be the basis for significant improvements in highway safety because, finally, we will have real-world data about crashes and contributing conditions.

Now that all sites are operational and driver recruitment is approaching desired levels, preparing for analysis of the data collected during the study becomes a priority. Four contracts have been awarded to develop data analysis methods that result in new information and insights on critical safety issues that lead to safety benefits. Methods will be tested on small samples of data collected from the study and, in a second phase of the projects, full analysis will be conducted using the most resilient and promising methods. The data analysis will produce a new understanding of driving behavior, which will be the foundation for policies and technologies that improve safety on our roadways.

#### Capacity

Systematically integrating environmental, economic, and community requirements into planning for new highway capacity is the objective of this focus area. About half of Capacity projects are now completed. Three major webbased products are available in test versions and workshops are being held to gain user input in preparation for implementation. They include TCAPP, the framework for making collaborative decisions that speed transportation project delivery; T-Viz, a tool that helps communities visualize a



Demonstration of nondestructive test methods for bridge decks

transportation project, building collaboration into planning and design, which reduces project delays; and TPICS, which helps assess the economic impacts of planned transportation projects. A multi-agency workshop is being planned to orchestrate implementation activities with federal and state agencies. Ten pilot tests are under way in six states: two related to integrating traveler choice and road network conditions into travel demand models, four are testing sections of TCAPP, and four others are testing ecological approaches to environmental protection in highway project planning and design.

One area of special interest is work being done to advance freight demand models and to improve the data used for forecasting freight demand so it reflects actual needs of the industry. The current work provides a strategic plan and a roadmap for much-needed improvements that will enable multiple funders of research to build on this work toward a common vision.



Example of T-Viz guide to visualizing highway planning options

#### Reliability

This focus area has the goal of providing reliable travel times by reducing and preventing nonrecurring congestion. Five projects have been completed, 13 are active. Several projects emphasize integrating highway systems operations and management strategies into transportation agency business processes and across institutional divisions to systematically achieve benefits from reduced congestion. A *Guide to Integrating Business Processes to Improve Travel Time Reliability* is now available on the SHRP 2 website and through the TRB bookstore. A web-based framework that provides examples of successful practices and materials that help make the case for focusing on improved travel time reliability is also in development.

New tools for data collection and analysis are also developing from Reliability research. Transportation agencies and practitioners will soon have a new Guidebook to help establish a travel time monitoring program they can use to gather and convey reliability data that can be used to inform strategic decisions.

Designing for reliable travel times is another area that holds promise for reducing congestion. One product will help users identify and evaluate the costs and effectiveness of design features that can improve reliability. More than 50 design treatment examples can be analyzed and future work in this project will develop the basis for cost/benefit analysis.

#### Renewal

In many Rapid Renewal projects, research has identified reasons why innovative techniques have not been widely implemented and developed methods, technologies, and the basis for specifications to support mainstreaming advanced materials and methods for renewing roads and bridges. Rapid renewal projects in SHRP 2 address accelerated construction methods, project delivery and design, and operational and maintenance features that minimize total project time and produce long-lasting facilities. Five projects have been completed, 23 more are active. Eleven Renewal products are being tested in 17 different states.

Products of Renewal research will provide new strategies and tools for pavements, bridges, nondestructive testing, coordinating with railroads and utility companies, and speeding project delivery. For example, new tools for locating and identifying underground utility lines and resources to help match a location technology to specific site conditions will help keep projects on schedule, reduce the number of utility strikes, and reduce risk of injury or property damage. Six projects related to utilities will produce a suite of new resources.

# New Tools for Reliable Travel Times

7 Causes of Nonrecurring Congestion		SHRP 2 Products
-	Incidents	Regional Operations Academy to help mainstream operations strategies. Executive workshops to convey the value of operations strategies to agency mission. Interagency Training for incident responders.
濑	Weather	Travel Information guide and analysis tool for selecting design treatments that improve reliability. Part of a new method to address reliability in the Highway Capacity Manual.
*	Work Zones	Tools for travel time monitoring. Models for real-time congestion management
N/N	Fluctuation in Demand	Performance Measures. Value of Reliability. Incorporating reliability into planning & programming. Economic evaluation model
2	Special Events	Travel time monitoring. Organizational strategies to improve travel time reliability. Improving data for traveler information
*	Traffic Control Devices	Reliability Monitoring Systems. Methods for estimating capacity of urban streets.
•	Inadequate Base Capacity	Guide for geometric designs that advance reliability. Analytical model for assessing effectiveness of strategies. Ways to incorrorate reliability into planning & programming

## **Staff News**

Hans van Saan, a visiting professional from Rijkswaterstaat, the Dutch highway agency, has returned home to Delft after helping to advance SHRP 2 projects in the Reliability area for the past two years. His compatriot, Onno Tool, joined us in August. Onno's expertise is also in the area of highway operations and intelligent transportation systems and he is working in partnership with FHWA on implementation plans for SHRP 2 Reliability products.

Ralph Hessian, former Director of Highway Engineering Services for Nova Scotia Department of Transportation

This bridge replacement project under way in lowa combines design, materials, and methods that reduce road closure from 6 months to 2 weeks and produce a bridge that will last longer and be easier to maintain. This combination of advanced techniques could be used in thousands of similar projects across the country.

and Public Works, has been working with SHRP 2 as a visiting professional through an arrangement with the Canadian Council of Deputy Ministers responsible for Transportation and Highway Safety. Ralph is ably shouldering projects in both Reliability and Capacity focus areas, facilitating collaboration on a SHRP 2-style naturalistic driving study in Canada, and strengthening ties between TRB and several Canadian transportation organizations.

Through an agreement with the French Institute of Science and Technology for Transport, Development and Networks (IFSTTAR) in Paris, Abdelmename Hedhli has also joined SHRP 2 as a visiting professional. Mename brings his expertise in corridor planning and management and intelligent transportation systems to his work with SHRP 2 Reliability projects.

# STAY TUNED

A lot is happening now that SHRP 2 products are emerging but it's easy to stay informed.

Subscribe to the SHRP 2 News for announcements of webinars, field test opportunities, publications, and other events.

Visit www.TRB.org/SHRP2.

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