Intelligent Transportation Systems Joint Program Office (ITS JPO)

ITS Newsletter | August 2013

Help Shape the Future of Federal ITS Research

The U.S. Department of Transportation (USDOT) to Host Open Forums to Help Shape Next ITS Strategic Plan (Pg. 1)

The USDOT is developing a strategic plan for how it will allocate federal intelligent transportation systems (ITS) funds during the second half of the decade and will be holding a series of open forums and webinars to collect stakeholder input.

QUESTIONS?

At the Research and Innovative Technology Administration, we are committed to providing information and engaging new and existing stakeholders throughout the research process. If you have questions about our programs, please contact Mike Pina at *mike.pina@dot.gov*

USDOT to Host Open Forums to Help Shape Next ITS Strategic Plan

The USDOT is developing a strategic plan to determine the ITS research initiatives that it will advance during the second half of the decade and will be holding a series of open forums and webinars to collect stakeholder input.

The open forums will take place at the following conferences:

- National Rural ITS Conference, St. Cloud, MN, August 26, 2013
- Institute of Electrical and Electronics Engineers (IEEE) Vehicle Technology Conference, Las Vegas, NV, September 2, 2013
- Connected Vehicle Public Meeting, September 24-26, 2013.

The USDOT will also host a number of webinars in August. To register for the webinars, visit: www.itsa.org/strategicplanwebinar.

During the open forums, stakeholders will be able to comment on the next phase of the USDOT's ITS research and programs, as well as some key themes that will help guide the agency's connected vehicle research. The themes include:

- Maturing Connected Vehicle Systems – Focuses on what is needed to accelerate the maturity of vehicle-based communications with surrounding systems
- Piloting and Deployment Readiness – Focuses on the security, policy, business opportunities, capabilities, pilots, and incentives needed to support vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) implementation
- Integrating with the Broader Environment – Focuses on the integration and decision support capabilities to enable V2V and V2I (collectively termed V2X) interaction with other governmental services and public utilities.

Throughout the development and enactment of the current research agenda, the ITS JPO has pursued active and consistent engagement with a broad stakeholder community. This partnership has ensured that the ITS JPO's initiatives and programs reflect the interests of the public and continue to stay relevant in an evolving industry. For the next installment of its agenda, the ITS JPO aims to continue to engage stakeholders in helping to shape the future of federal ITS research.

The ITS JPO expects to publish the next installment of the strategic plan in January 2014. To view the draft focus and themes and find out how to participate in the stakeholder sessions, visit http://itsstrategicplan.ideascale.com.

Professional Capacity Building (PCB) Program Sees Increased Usage

The word is spreading about the benefits of the PCB Program. The ITS PCB Program is the USDOT's primary mechanism for educating the public and private sector transportation workforce about ITS. The program supports activities that deliver multi-modal ITS learning opportunities and:

- Coordinates outreach related to the JPO's ITS research initiatives
- Provides technical assistance to ITS deployers through ITS Peer-to-Peer (P2P) and Talking Technology Transportation (T3) webinar programs
- Delivers ITS training through partners.

Over the past year, the program and its newly designed website have experienced increased usage. In 2012, the program's T3 webinars averaged 138 attendees per webinar. In 2013, the average number of attendees has increased to 175 per webinar. The PCB archives have also experienced an increase in usage of approximately 25 percent since 2012. The ITS PCB website itself now shows significant usage with a monthly average of 217,000 visits. As of April 2013, the ITS PCB program is using Google Analytics (enhanced web analytics) to track website use and order of page hits.

The Center for ITS Training and Education (CITE), one of the PCB Program's ITS training partners, is also reporting a strong increase in both courses taken and students involved since 2012. Since CITE began offering free courses to students in February 2012, there has been a 107-percent increase in course enrollment. CITE was prominently mentioned in a recent ITS PCB brochure. The ITS brochure and other marketing efforts will likely produce notable increases in the number of students and modules taken for ITS Standards Training and the demand for additional ITS Workshops at ITSA State Chapters (these training numbers are just now becoming available).

For more information on the PCB Program and its training opportunities, visit: www.pcb.its.dot.gov.

Connected Vehicle Applications: Their Promise for the Environment

The USDOT is developing advanced vehicle applications that promise to reduce transportation's impact on the environment.

Connected vehicles are a major part of the future of transportation. In addition to the ability to save lives and improve mobility, this system of talking cars also has the potential to improve the environmental sustainability of our transportation system, and thus our lives. Recognizing this, the USDOT is in the midst of a program researching sets of connected vehicle applications that, if implemented together, could provide significant environmental benefits.

Through its Applications for the Environment: Real-Time Information Synthesis (AERIS) program, the USDOT envisions *"cleaner air through smarter transportation."* AERIS research focuses on the following three bundles of connected vehicle applications:

- **Eco-Signal Operations.** Idling while stopped at traffic signals is a major cause of unnecessary vehicle fuel consumption and vehicular emissions. Eco-Signal Operations includes the use of connected vehicle technologies at smart traffic signals to reduce idling and unnecessary stops. *Eco-Approach and Departure at Signalized Intersections applications* consist of traffic signals broadcasting data about their current signal phase and timing. In-vehicle systems then use these data to determine speed advice for drivers, allowing them to adapt their vehicles' speed to pass the next traffic signal on green or to decelerate to a stop in the most eco-friendly manner. In the future, more advanced applications may leverage vehicle automation capabilities to implement the speed adjustments or leverage engine stop/start technology to conserve energy by shutting off the engine when the vehicle is at rest at a traffic light, and automatically re-starting it when the driver pushes the gas pedal to go forward. Initial AERIS modeling results suggest these applications have the potential to reduce a vehicle's fuel consumption by 1 to 10 percent along a signalized corridor.

  Similar to today's adaptive signal systems, *Eco-Signal Timing applications* seek to optimize the traffic signal's operation using real-time data. However, instead of using data from traffic sensors, these applications leverage data collected from connected vehicles. The AERIS Program envisions traffic signals collecting data from vehicles, such as vehicle type, location, speed, and emissions data, to optimize traffic signal timing in real time serving actual traffic demands while minimizing the environmental impact. The AERIS program recently began modeling an *Eco-Signal Timing application* using a microscopic simulation model (Paramics), emissions model (MOVES), and a genetic algorithm. The program is exploring whether additional environmental benefits can be achieved from optimizing traffic signal timing plans for the environment compared to optimizing for mobility.

- **Eco-Lanes.** Eco-Lanes are similar to high-occupancy vehicle or high-occupancy toll lanes, but facilitate green transportation choices by providing benefits to travelers choosing to drive low-emissions vehicles, carpool, or practice eco-driving strategies while in the eco-lanes. These lanes may support bus rapid transit or serve as a freight corridor supporting the movement of goods. The AERIS Program foresees eco-lanes allowing low

Connected Vehicle Applications:
Their Promise for the Environment *(continued)*

emissions vehicles (e.g., electric or hybrid vehicles) to use dedicated lanes to avoid congestion on the regular lanes. Once permitted in the lane, the driver experiences: (1) an eco-variable speed limit that is responsive to real-time traffic and environmental conditions and/or (2) vehicle platooning that would use automated vehicle technologies to enable vehicles to travel in platoons with small headways. The Safe Road Trains for the Environment (SATRE) Project in Europe estimates that vehicle platooning has the potential to reduce CO_2 emissions by 20 percent[1]. Another possibility in these lanes is the use of wireless inductive charging loops embedded in the pavement that transfer power to electric vehicles, enabling them to charge their batteries while moving at highway speed.

• **Low Emissions Zones.** Low Emissions Zones involve a geographically defined area that restricts or deters access by specific types of high-polluting vehicles within the zone to improve the zone's air quality, reduce the number of polluting vehicles, encourage drivers to take public transport, and/or effect other operations changes, both at the system and driver levels. Similar zones exist today including a Low Emissions Zone in London, England, that aims to reduce traffic pollution by deterring the most polluting diesel-engine lorries, buses, coaches, minibuses, and large vans from driving within the city. Vehicles must meet the Euro III standard for particulate matter or pay a daily fee to drive in zone. Connected vehicle technologies could enhance these zones. For example, if real-time data from the vehicle shows that it is being driven in a manner that reduces emissions (i.e., practicing eco-driving), the driver could be given an economic reward or incentive. Transit vehicles would be able to enter the Low Emissions Zone without paying a fee, encouraging travelers to use public transportation. The levels of transit service (and fares) may be adjusted in real time based on the Low Emissions Zone status; drivers may also be able to reserve transit services in real time during their trip.

The AERIS Program will update and further define each of these bundles of applications as it continues the modeling phase of its research in which it further examines possible benefits and mobility tradeoffs associated with each. During this phase, the program is using traffic simulation and emissions models to conduct a robust modeling methodology and evaluation. Concepts of operations and detailed analysis plans have been developed for each of the application bundles, and modeling is currently underway. Further research may justify prototyping and testing the *Eco-Approach and Departure at Signalized Intersections application* in a real-world test environment.

For more information about the AERIS Program, visit: **www.its.dot.gov/aeris/index.htm**

[1]The Volvo SATRE Project. **www.media.volvocars.com/global/enhanced/en-gb/media/preview.aspx?mediaid=36000**.

FRATIS: Providing Advanced Traveler Information to Freight

The USDOT is bringing advanced traveler information to the freight industry. Advanced traveler information, such as on real-time incidents, congestion, and travel time, has the potential to improve the mobility, safety, and environmental sustainability of our nation's transportation system. However, there currently is a lack of advanced traveler information specific to the freight industry. The USDOT is launching a new prototype program that will test advanced freight information systems and bring some of its benefits to our freight community.

Although some commercially available and custom-developed products already exist for freight in advanced traveler information systems, route guidance, and drayage optimization and some state departments of transportation (DOTs) have limited freight-specific information, the information and products aren't robust or widely available within the freight community. Through its dynamic mobility program, the USDOT is investing in a Freight Advanced Traveler Information System (FRATIS) that would bring all of the data and applications together to make freight information more broadly available to the freight industry, including smaller companies and owner operators.

As part of this effort, the USDOT's prototype program will test advanced freight-information systems in three locations—Dallas, TX; Los Angeles, CA; and southern Florida. Each test site will include 50 trucks. The Dallas pilot project will focus on inland port operations and improving pick up at rail facilities to warehouses or container depots. In Los Angeles, the testing will focus on improving the flow of freight in and out of the Port of Los Angeles. In Southern Florida, the testing will examine the potential to improve emergency response by optimizing freight movements for hurricane relief as well as debris removal. The 6-month tests will begin in September. The USDOT is collecting the baseline data now for comparison once the systems are launched.

The USDOT is looking at the prototypes' implications for the entire regions, as well as the freight community as a whole, and anticipates both public and private sector benefits, such as better truck utilization and reduced inefficient moves. The prototype program also has implications beyond the freight community, as improved freight operations will result in improved mobility, safety, and environmental sustainability for our entire transportation system.

USDOT Releases a Guide to Federal ITS Research

The USDOT has developed a new guide to its federal ITS research. The guide provides a quick overview of the ITS Program's extensive research and initiatives. The guide highlights the ITS JPO's connected vehicle research, including connected vehicle applications, policy and institutional issues, and technology.

Although research in support of connected vehicles is a central part of the ITS Program, additional ITS research is being conducted that reinforces the overall vision of ITS. The guide also describes these research efforts, such as the ITS JPO's short-term intermodal research programs, ITS exploratory research, and cross-cutting programs in support of ITS modal research.

To download the guide, visit:

www.its.dot.gov/factsheets/pdf/ITS_MiniFactBooklet_V11.pdf.
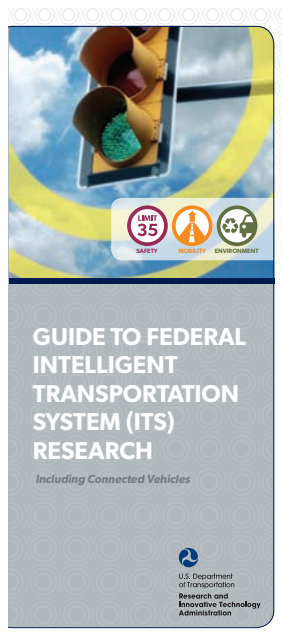
Motorcycles Join the Connected Vehicle Safety Pilot Model Deployment

The above photos feature the cycles that are being used in the Safety Pilot Model Deployment.

Motorcycles join nearly 3,000 cars, trucks, and transit vehicles equipped with wireless connected vehicle devices operating on public streets in Ann Arbor, Michigan.

The USDOT, in partnership with the University of Michigan Transportation Research Institute, has launched a motorcycle study to determine how vehicles and motorcycles interact using vehicle-to-vehicle (V2V) communications. As part of this Connected Vehicle Safety Pilot Model Deployment, six motorcycles and a bicycle have been added into the deployment area this summer.

Honda and BMW have equipped the motorcycles and bicycle with vehicle awareness devices that transmit basic safety information such as location and positioning. Study participants who have appropriate licenses are driving the motorcycles along their daily routines in the Ann Arbor area.

The Connected Vehicle Safety Pilot Model Deployment is the largest real-world test of connected vehicle technology ever. The pilot aims to determine the technology's potential to reduce the number of crashes and improve the safety of our roads. The pilot will also provide robust information to support a potential rulemaking by the National Highway Traffic Safety Administration (NHTSA) on the future of connected vehicle technology.

For more information, visit: www.safetypilot.us.

USDOT Announces $6.4 million in Grants for Multistate Corridor Operations and Management (MCOM) Program Projects

The USDOT awarded $6.4 million in grants to seven projects that use innovative technologies to improve safety and relieve congestion. The MCOM Program promotes ITS solutions and research that have widespread application across several states, as well as regional cooperation and shared project implementation.

The Department selected the following projects:

- I-95 Corridor Coalition
- Great Lakes Regional Transportation Operations Coalition
- ITS Heartland Corridor Coalition
- I-81 Corridor Coalition
- Great Northern Corridor Coalition
- I-80 Corridor Coalition
- I-5 Corridor Smart Truck Parking Corridor Coalition.

Integrated Corridor Management (ICM) Helps Transportation Agencies Achieve Goals

Transportation leaders across the country have a common desire—to move people and goods safely, efficiently, and reliably. Transportation system users want the same thing—to travel safely, reliably and efficiently. ICM is an approach through which transportation professionals work together across agencies and jurisdictions to do just this—move people and goods more efficiently by operating transportation corridors as an integrated system.

Agencies in ICM corridors work cooperatively to coordinate transportation operations, share data, and leverage business practices to optimize existing infrastructure, improve reliability and mobility, and empower travelers.

The USDOT's ICM Initiative has launched two demonstration sites in San Diego, CA (along I-15 corridor), and Dallas, TX (along I-75 corridor). These locations are demonstrating some of the nation's first decision support systems being applied to transportation operations for multimodal surface transportation systems. The ITS America recognized San Diego's ICM project as among the "Best of ITS 2013," awarding it "Most Innovative Practice."

More than a half-dozen locations participated in ICM knowledge and technology transfer pilot workshops including Bend and Portland, OR; Chicago, IL; Los Angeles and the Bay Area in CA; New York, NY; Virginia; and Southeast FL. These regions not only have burgeoning population growth, but also expect increased freight traffic in the coming decade.

Modeling results at three sites showed that ICM improved the corridors' mobility, reliability, and environmental impacts. Benefits outpaced implementation costs of ICM within the first year, and as much as 22 to 1 over a decade, far outpacing management and operations costs (when extrapolated in the model, factoring for inflation). Implementers cite the following additional reasons for looking to ICM:

- ICM supports regional planning goals. USDOT and MAP-21 legislation will increasingly require integrated performance approaches. ICM can help locations be ready for this.

- Many regional transportation plans project doubling of freight volumes and passenger trips in the next one to two decades. ICM offers proven approaches and methods for meeting this demand through more efficient operations within existing infrastructure.

- Physical infrastructure and funding are limited. Relatively small investments can help generate improved, long-term return on investment (ROI) for all agencies. By approaching investments cooperatively toward a shared vision, agencies often get more of what they want than they can alone.

- Many regions are already "thinking ICM" with concepts that reflect the principles of active management—ITS investments and institutional frameworks make ICM feasible.

Integrated Corridor Management (ICM) Helps Transportation Agencies Achieve Goals *(continued)*

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Federal Highway Administration

U.S. Department of Transportation
Federal Transit Administration

- Rural as well as smaller urban areas project reliability challenges due to traffic incidents and severe weather that grow as regions grow. ICM can help regions make decisions now that can protect safe and reliable travel.

- Knowledge and technology transfer support allows regions to watch, listen, and learn live from demonstration sites and other early adopters as lessons unfold and accelerate efforts as new approaches are tested and proven effective.

Learn More

The research initiative's knowledge and technology transfer (KTT) program supports regions interested in ICM through half-day executive and two-day workshops that connect stakeholders with Federal Highway Administration leadership, technical experts, and peers. The workshops provide customized support to advance ICM in regions with multimodal corridors seeking to gain maximum performance and value from existing infrastructure. A four-hour introductory workshop is available through RITA's Professional Capacity Building Program. Visit www.pcb.its.dot.gov to find out more.

Stakeholders can also participate in topic-specific webinars offered periodically through RITA, ITSA, or ITE. Contact Bob Sheehan (robert.sheehan@dot.gov), P.E. PTOE, Systems Management Team, FHWA, Office of Operations, (202) 366-6817, to learn more about ICM and the ICM workshop series or to request a workshop for your region.

Download the ICM Implementation Guide at: http://ntl.bts.gov/lib/47000/47600/47670/FHWA-JPO-12-075_ FinalPKG_508.pdf, available now through the National Transportation Library.

Bookmark the searchable/browsable Knowledgebase (www.its.dot.gov/icms/knowledgebase.htm) for additional resources including fact sheets and example technical documentation such as concepts of operation and requirements documentation from sites that share similar characteristics.

Subscribe to the ICM newsletter (giragosiana@saic.com) and stay informed on the progress of the demonstration sites and upcoming ICM knowledge and technology transfer materials and activities.

USDOT to Host Public Meeting on Connected Vehicle Research Program: September 24-26, 2013, in Arlington, VA

The USDOT will host its public meeting providing an overview of the Intelligent Transportation System Joint Program Office (ITS JPO) connected vehicle research program.

The Connected Vehicle Program Public Meeting is the best opportunity to learn details about the connected vehicle research program in anticipation of the National Highway Traffic Safety Administration's 2013 decision regarding vehicle safety communications for light vehicles and 2014 decision for heavy vehicles.

The meeting will be held from September 24 to 26, 2013, at the Holiday Inn in Arlington, VA. The meeting will have focused discussions on the ITS JPO's connected vehicle safety program, including vehicle-to-vehicle communications, safety pilot, vehicle-to-infrastructure communications, human factors, and policy. There will also be a special session dedicated to the ITS Strategic Plan for 2015 to 2019. In addition, there will be a session on the developing USDOT Multimodal Plan for Vehicle Automation. The agenda for the meeting will be posted soon on the ITS JPO website at www.its.dot.gov.

To register for the meeting, please visit: www.itsa.org/connectedvehicleworkshop

To book a hotel room, visit www.hiarlington.com or call 1-800-HOLIDAY.