Volpe Highlights

U.S. Department of Transportation, Research and Innovative Technology Administration

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Volpe Research Targets Distracted Driving

The Volpe Center has long played a leading role in research related to distracted driving and safety. As many as 22% of highway accidents, injuries and fatalities can be attributable to drivers being distracted in the course of operating their vehicles. In some cases, these distractions are external to the driver or vehicle and cannot be controlled. In other cases, however, the drivers themselves are the actual cause of the distraction, especially when multitasking while driving. Secretary of Transportation Ray LaHood highlighted the U.S. DOT's concern over this issue by recently convening a summit on Distracted Driving. Several major projects in this area are currently underway at the Volpe Center:

The National Highway Traffic Safety Administration (NHTSA) *Crash Warning Interface Metrics* (CWIM) program evaluates the potential need for standardization of in-vehicle driver and crash warning system interface designs and the effectiveness and driver acceptance of active and passive lane departure prevention systems through vehicle simulation research. The Volpe Center provides independent review of CWIM deliverables, including the project test plan, technology survey, data derived from the simulation procedure, statistical analyses of those data, and summary reports.

The RITA/NHTSA-sponsored *Integrated Vehicle-Based Safety Systems* (IVBSS) concept creates a coordinated suite of in-vehicle technologies that simultaneously warn drivers of imminent crashes and help to prevent rear-end, lane-change and road-departure crashes. This cooperative endeavor includes NHTSA, the Intelligent Transportation Systems Joint Program Office, the Volpe Center, the Federal Motor Carrier Safety Administration, the University of Michigan Transportation Research Institute and the automotive supplier industry.

continued on page 4

In this issue

Major Initiative Takes Transportation Safety Commitment to Next Level

Secretary Ray LaHood convened the first meeting of the newly created Department of Transportation Safety Council to tackle critical transportation safety issues facing the nation. "Now is the time to identify and address the top safety issues that cut across our agencies," said Secretary LaHood, "The Council will take our commitment to safety, which is our highest priority, to the next level."

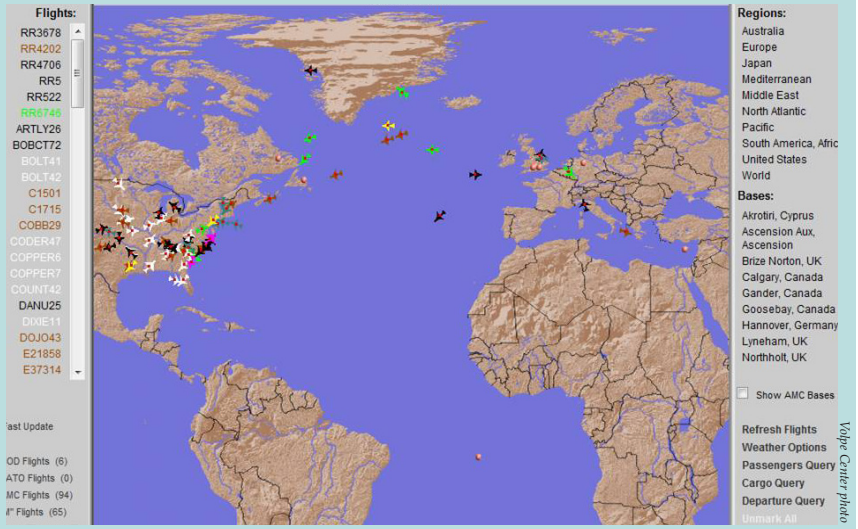
Secretary LaHood created the Safety Council, chaired by Deputy Secretary John Porcari, to serve a broad-based safety leadership role and help break down organizational stovepipes. The Safety Council is comprised of the heads of the U.S. DOT's ten agencies. The goals of the Safety Council are to further enhance the safety focus throughout all agencies of the Department and improve the impact of the Department's safety programs.

The Council will be action-oriented, data-driven, emphasize open dialogue about common issues and provide a forum for fresh ideas and new perspectives. Among the attendees at the inaugural meeting were Volpe Center Director Robert Johns and Stephen Popkin, Director of the Human Factors Research and Systems Application Center of Innovation. Dr. Popkin and other Volpe Center staff are providing strategic support to the new Council.

Volpe Center photo

Pictured above, from a recent visit to the Volpe Center, from left to right: Peter H. Appel, Administrator, Research and Innovative Technology Administration; U.S. Deputy Secretary of Transportation John D. Porcari; Robert Johns, Director, Volpe Center; and Assistant Secretary for Transportation Policy Polly Trottenberg. The Deputy Secretary chairs the new Safety Council.

UK Ministry of Defence Streamlines Passenger and Cargo Tracking



Volpe engineers have designed a web-based interface to display passenger and cargo data of in-flight aircraft.

The UK Ministry of Defence Royal Air Force (RAF) now has detailed passenger and cargo data for flights available at the click of a mouse. This is the most recent functionality built into the Remote Access Management Portal, a project under development by a joint Volpe Center–RAF team to enhance RAF operations. The current passenger- and cargo-tracking systems offer data in different formats, making it difficult to present information from both sources in a single tool. However, Volpe engineers have done just that, presenting data from the two distinct systems in a single web-based interface. While viewing an intuitive map display, operators can select icons representing en-route aircraft and instantly see both the flight's passenger list and cargo inventory.

Volpe engineers created the interface using data brokering technology, which they pioneered in support of the U.S. Air Force in the 1990s. A data broker acts as a universal interpreter for otherwise incompatible data systems, translating between systems where possible and alerting involved parties when data transmission may contain gaps. This system integration is one of the newer features that the Volpe Center has provided as part of longstanding research and information systems support to RAF.

The partnership began twenty years ago, when the Volpe Center was coordinating a project to make use of valuable but previously idle data. The ingenuity of the Volpe team caught the attention of the UK Ministry of Defence, which soon after initiated a relationship.

In working together since then, the Volpe Center and RAF team have come to manage projects through a new development methodology called agile development. This is a process by which RAF outlines a deliverable, the Volpe team rapidly develops a prototype, and then the partners engage in dynamic refinement. With the commitment by both parties of small, flexible and highly collaborative teams, this arrangement has proven effective recently in providing an interim cargo management software solution. The Volpe-RAF team's success points toward efficient timelines, lower costs, and critical technological advances as the relationship continues.

Volpe Hosts Airborne Network Information Assurance Meeting

The next generation of commercial and military aircraft will be increasingly reliant on information networks for communications, control, navigation, fleet management and even passenger entertainment. To ensure that potential cyber security issues are effectively addressed, the Volpe Center recently hosted a two-day interagency meeting on Airborne Network Information Assurance with sponsors and stakeholders in the FAA, the U.S. Air Force (USAF), the Department of Defense and the United Kingdom Government.

The meeting addressed future aircraft cyber security challenges, developing and coordinating airborne network cyber security requirements and simulation models of airborne information assurance scenarios, and enhancing working relationships among U.S. Government and international agencies. The Volpe Center and the USAF are drafting a charter for future meeting of the group.

The Volpe Center has specialized technical expertise that helps sponsors throughout the risk management cycle of designing, assessing, implementing and operating information security systems.

Cloud Computing Environment for "Cash for Clunkers" Program

Photo courtesy of Andrew Turnbull

"Cash for Clunkers" resulted in nearly 700,000 disposed vehicles in the United States.

This summer's Car Allowance Rebate System (CARS), commonly referred to as "Cash for Clunkers" and managed by the National Highway Traffic Safety Administration (NHTSA), gave buyers up to $4,500 towards a new, more fuel-efficient vehicle for trading in their old gas-guzzling cars or trucks. When the program ended in August, dealers had submitted sales and financial data on more than 690,000 disposed vehicles totaling nearly $3 billion in rebates.

This entire CARS processing system was created, implemented, tested and then activated on extremely short notice. NHTSA turned to the Volpe Center to support development of the Cloud Computing and COLO Hosting System architecture for receiving and processing this data. NHTSA will use this environment to match vehicle disposal data with the original dealer invoices.

Volpe Center activities include server setup, patching and maintenance, interface with agencies, technical documentation and infrastructure support. The development cycle is currently in the second of three phases and will ultimately led to a flexible, complex architecture named CARS Computing Architecture version 2.0 that will remain for the next three to four years until all disposal data is investigated and reconciled. The results of NHTSA and the Volpe Center's first cloud computing project will be used as a template for future endeavors.

Joint Rule Proposed for New Fuel Economy Standards

This fall the National Highway Traffic Safety Administration (NHTSA) and the Environmental Protection Agency (EPA) issued a joint proposal to increase Corporate Average Fuel Economy (CAFE) standards during model years 2012 - 2016 and establish the first national greenhouse gas (GHG) emission standards under the Clean Air Act. The new CAFE standards will require manufacturers' passenger car/light vehicle fleets to meet an estimated average of 34.1 miles per gallon by 2016. These rules were developed in response to President Obama's call for a National Fuel Efficiency Policy that would combine ambitious but achievable fuel economy and GHG emission goals.

The Volpe Center has been providing NHTSA with the development and application of a modeling system and related information in order to support the development and evaluation of options for new CAFE standards since 2002. This year, the Center supported both NHTSA and an interagency team in developing a harmonized program of federal CAFE and GHG emission standards. The Center worked extensively with the other Federal agencies to estimate the direction of the light vehicle market, the effectiveness and cost of available fuel-saving technologies and related economic factors and to apply these estimates in a Volpe-developed CAFE modeling system which provides estimates of the costs, effects, and benefits of the proposed new CAFE standards. The harmonized standards will avoid the proliferation of a patchwork of state regulations, leading to greater reductions in fuel consumption and emissions at lesser cost to the automotive industry and driving public.

At the U.S. Transportation Secretary's recent awards ceremony, Kevin Green, Ryan Harrington and Don Pickrell of the Volpe Center were recognized as part of the CAFE team, receiving a prestigious Partnering for Excellence Award for their work. The Secretary awarded the team with the Department's second-highest honor for exemplary dedication and teamwork.

U.S. DOT Secretary Recognizes Volpe Center Staff

Photo courtesy fo U.S. Department of Transportation

U.S. Secretary of Transportation Ray LaHood addresses the audience at the Department's Annual Secretary Awards Ceremony.

Several Volpe Center employees received recognition for their work at the U.S. Department of Transportation's 42nd Annual Secretary Awards Ceremony on October 21, 2009 in Washington, D.C.

Judith Burki-Cohen of the Human Factors Research and System Applications Center of Innovation received a Secretary's Award for Excellence for supporting the FAA in developing international scientifically-based requirements for flight simulators that train the Nation's airline pilots.

Robert Aducci, Karina Jacobsen, and David Tyrell of the Physical Infrastructure Systems Center of Innovation received a Secretary's Award for Transportation Safety for their contributions totThe Austin Capitol Metro Commuter Railroad Oversight Team. They consistently demonstrated superior education outreach, collaboration, oversight, and partnership with new members of the regulated commuter rail community.

Atinuke (Tinu) Diver of the Chief Counsel Office received a Secretary's Award for Outstanding Achievement in Equal Employment Opportunity and Affirmative Action for working effectively to partner with different groups to promote diversity and attain Equal Opportunity and Affirmative Action goals.

The Maritime Safety and Security Information System Team received a Secretary's Team Award for developing the MSSIS and ushering in a new level of international cooperation aimed at securing ocean shipping. Members of the team who received recognition were Kam Chin, Rodney Cook, McCharles Craven, Bryan Long, Jessica Montana, Daniel Nim, David Phinney, Brendon Providence, and Henry Wychorski, of the Freight Logistics and Transportation Systems Center of Innovation.

The Corporate Average Fuel Economy Team at the Volpe Center received the Partnering for Excellence Award (related story on page 3).

Distracted Driving *continued*

The Volpe Center's contributions to this initiative include assisting with vehicle systems design and functionality, verifying vehicle test procedures, preparing an independent test evaluation plan, independently evaluating test results, developing data mining algorithms, and creating techniques for forecasting IVBSS safety benefits.

When installed, *Positive Train Control* (PTC) systems will warn train operators of potential crash situations in real time. The Volpe Center has assisted the Federal Rail Administration to draft new rules covering the use of PTC systems by the nation's railroads through the issuance of a Notice of Proposed Rulemaking. The Volpe Center provides operations research support in the areas of system interoperability, risk assessment and communication security.

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