Research and Innovative Technology Administration

the VOLPE center

National Transportation Systems Center

HIGHLIGHTS

Cambridge, Massachusetts Summer 2005

Director's Notes

Cross-Cutting Capabilities Applied to Transportation Issues

In this issue of the Volpe *Highlights,* we introduce Dr. Ashok Kaveeshwar, our new RITA Administrator. We are pleased to welcome him. In his recent visits to the Volpe Center, our senior staff has briefed Dr. Kaveeshwar on our work here, and he is providing leadership and guidance that we know will increase our effectiveness as a systems center for transportation innovation.

With this issue we also start a new series that features the Center's ability to address transportation problems in innovative ways that cut across traditional disciplines and encourage the transfer of lessons learned from one transportation mode to another as required. We believe that this capability is a function of our systems approach to transportation issues – our ability to perceive and address the

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Inside

Dr. Ashok Kaveeshwar: First RITA Administrator

Dr. Ashok Kaveeshwar, Administrator of the Research and Innovative Technology Administration (RITA), the parent agency of the Volpe Center.

Dr. Ashok Kaveeshwar is the first administrator of the newly created Research and Innovative Technology Administration (RITA), the parent agency of the Volpe Center. RITA was created under the Norman Y. Mineta Research and Special Programs Improvement Act to more effectively coordinate and manage the U.S. DOT's research portfolio and to expedite the implementation of cross-modal, innovative technologies.

The U.S. Senate approved Dr. Kaveeshwar's nomination by President George W. Bush on June 30, and he was

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Focus

Improving Efficiency and Effectiveness through Organizational Development

Public agencies across the nation face similar challenges: reduced resources, heavier workloads, and increased demand for results. To address these problems, managers often have to change the structure of their organizations and business processes. The Volpe Center provides organizational development and change management expertise tailored to the specific needs of government agencies. Volpe experts in behavioral, social, and managerial sciences use an array of tools and methods to help

a wide range of public sector organizations target scarce discretionary resources for maximum impact; design effective organizational processes and structures; manage conflict and consensus building; create effective teams; and implement solutions to help organizations increase productivity and effectiveness and manage change.

Clients come to the Volpe Center because of its reputation as an objective partner with valuable government experience. Volpe takes a systemic approach that encompasses the organization, the processes that make it run, and its stakeholders. This approach has been effective in working with teams, administrative units, entire agencies, and multiple internal and external stakeholders.

The following examples illustrate how Volpe has delivered results to its clients.

Helping the Coast Guard Improve Readiness

Shrinking maintenance and operations budgets in the 1990s have led to a distressing degradation in mission readiness for the U.S. Coast Guard's fleet of aging cutters. The Coast Guard Naval Engineering Program asked the Volpe Center for assistance in bringing more attention and resources to the problem of declining cutter readiness. The Volpe team, led by Dr. Rachel Winkeller, Acting Chief of the Planning and Policy Analysis Division, and Mr. Robert Pray of the Technology Applications and Deployment Division, helped the Coast Guard demonstrate a correlation between readiness measures and maintenance budgets. Volpe identified the systems and processes that contributed the most to lowered readiness and worked with Coast Guard senior managers to develop a Business Plan detailing strategies and actions to improve performance. The Volpe Center organized a conference of 150 naval engineers from across the Coast Guard to provide input to the Business Plan. Volpe has also been assisting in the implementation of the plan. With Volpe's support, the Naval Engineering Program has been able to make a successful business case for a substantial increase in funding and to identify priorities for maximizing the allocation of existing funds. The Business Plan has united the Naval Engineering Program around a common set of goals and objectives, and has provided a blueprint for improving cutter readiness.

Streamlining Transportation Services in the District of Columbia

The District of Columbia is unique in that it must plan and support transportation functions as both a state and a city. Its transportation system is also vital to the federal government. To improve its delivery of transportation-related services, the District of Columbia decided to separate its transportation functions from the Department of Public Works and create the District Department of Transportation (DDOT). It also adopted a project management team approach to improve the planning, design, and construction of infrastructure projects. DDOT called on the Volpe Center to

Organizational Development Overview

Volpe teams implement a range of organizational development activities to help public organizations increase productivity and effectiveness.

- Assess organization's condition and recommend policies, programs, and organization or process designs best suited to meeting objectives
- Conduct quantitative or qualitative examinations of institutional issues, studies of best practices, development of causal models where organizational factors are thought to be significant
- Collect and analyze input from customers and stakeholders
- Facilitate multi-agency coordination and cooperation
- Develop strategic plans, define goals and objectives, and plan and implement both short-term and long-term actions
- Develop performance metrics and accountability systems
- Develop outreach, technical assistance, and educational or training programs that promote behaviors that support new organizational or programmatic missions
- Evaluate the effectiveness of new programs both during and after their implementation

help plan and facilitate its organizational changes. The Volpe team, led by Dr. Jeffrey Bryan of the Planning and Policy Analysis Division, developed a collaborative redesign process that built consensus among the various functions affected by the change. Volpe supported a DDOT workgroup in developing performance goals for street and bridge construction projects; defining clear roles and responsibilities for all steps in the infrastructure development process, with a focus on including external stakeholders at key decision points; and streamlining work through the redesign of eight core business processes.

Ownership, commitment, and accountability are key components of the Infrastructure Project Management Team approach that Volpe helped the District of Columbia DOT develop and implement.

Linking Environmental Issues with Infrastructure Planning and Project Delivery

The Federal Highway Administration's Office of Planning, Environment, and Realty asked the Volpe Center to develop case studies of organizational best practices on how states link environmental compliance and permitting with long-term and mid-term infrastructure planning and with the project-delivery process. A Volpe team, led by Dr. Jeffrey Bryan of the Planning and Policy Analysis Division, interviewed staff from six state departments of transportation (Alaska, Delaware, Maine, South Carolina, New Mexico, and Wisconsin) to understand organizational models that lead to exemplary results in linking environmental issues with infrastructure planning and project delivery. The resulting case studies are being used by the Hawaii Department of Transportation to redesign the organizational structure of its environmental and planning functions.

Integrating Safety and Transportation in Northern Virginia

Northern Virginia's public safety and transportation operations center (PSTOC), slated to open in late 2007, is expected to achieve an exceptional level of interagency operational integration. The PSTOC is jointly conceived and funded by Fairfax County, the Virginia Department of Transportation, and the Virginia State Police. Since spring 2004, Volpe Center staff have been developing a high-level concept of cooperation and an operational transition plan for the PSTOC. Dr. David Damm-Luhr of the Planning and Policy Analysis Division manages the Volpe team. In the first phase of the project, Volpe helped develop the mission, goals, and objectives of the PSTOC, and gathered information on similar initiatives in other parts of the country. Volpe then conducted working sessions with each of the major groups to be located in the PSTOC to document what activities each group performs in carrying out its functions and to identify opportunities for greater cooperation on these activities. In the next phase, Volpe will help user groups define the details of day-to-day operations and center-wide decision making. Volpe regularly facilitates meetings that bring together senior staff from the county and state to discuss issues that cut across five user-level groups: facilities, equipment and systems, dispatching, information sharing, and administration. With Volpe's help, the agencies are working together to leverage assets, eliminate duplication of tasks, and resolve joint issues prior to the PSTOC opening. The process has opened communication channels and contributed to stronger intra-agency and

Interagency communication and coordination—early and often—has helped the Virginia DOT, the Virginia State Police, and Fairfax County plan their joint Public Safety and Transportation Operations Center. This unique, proactive process allows more than three years for phased planning.

interagency relationships that will serve to facilitate the move into the joint center.

Managing Congestion in Downtown Washington, D.C.

Traffic congestion is a serious problem for downtown Washington, D.C. Mayor Anthony A. Williams convened the Downtown Congestion Management Task Force in May 2004, with the main goal of improving traffic management while sustaining economic development. The Mayor's Task Force comprised 41 civic leaders, senior transportation and planning officials, and federal and District legislators. By creating working groups tasked to analyze different aspects of the congestion management problem and its solutions, the Volpe Center helped this diverse group of stakeholders generate a range of potential actions to better manage traffic in the downtown area. The Task Force settled on a set of actionable recommendations, some of which have already been implemented. Dr. Jeffrey Bryan of the Planning and Policy Analysis Division led this effort.

Enhancing Regional Emergency Preparedness and Security

Well-established relationships among regional agencies can enhance their ability to respond to emergency situations. The Volpe Center designed and conducted a series of forums called "Connecting Communities: Emergency Preparedness and Security" for the Federal Transit Administration. Attendees were exposed to the latest information on safety and disaster preparation, and participated in interactive presentations, breakout discussions, and emergency scenarios. To date, more than 2,000 transit employees and emergency responders have met in 19 forums nationwide. Each forum provided local transit, police, fire, medical response, and emergency management professionals with a common vocabulary as well as meeting places in which to begin working together as teams with a shared purpose. The Connecting Communities forums have helped create local networks that can facilitate regional planning and exercises, and ultimately improve emergency response. Bringing together representatives of different professional communities has also helped establish mutual understanding, trust, and procedures. Mr. Bob Adduci of the Railroad Systems Division leads the Volpe team.

Coordination among transit and emergency agencies is more important than ever. Volpe facilitates forums that help local agencies form networks and enhance teamwork to improve emergency response.

Improving Safety Culture

Volpe's human factors researchers analyze the relationship between human behavior and transportation safety and productivity. Some apply their knowledge of human capabilities and limitations to the design of organizational systems; for example, in the complex environments in which train crews, dispatchers, and maintenance workers perform their jobs. For the Federal Railroad Administration (FRA), Volpe is engaged in the implementation of two approaches to gathering and analyzing safety-related data that hold promise for preventing accidents: close-call reporting and behavior-based safety. These approaches include components of organizational development, addressing system change across the railroad industry by building trust and communication within an organization or among diverse groups of industry stakeholders.

"Close calls" can provide warnings about unsafe conditions. Studying close calls can help identify safety hazards and develop corrective actions that can prevent accidents. Gathering the data is challenging, because employees are often unwilling to report a close call if it could result in punishment. Encouraging employees to disclose safety-critical information requires a sense of trust as well as a voluntary and confidential reporting system. Dr. Jordan Multer of the Operator Performance and Safety Analysis Division leads a Volpe team that manages an FRA program to demonstrate the effectiveness of a Confidential Close Call Reporting System for the railroad industry. The Volpe team has successfully brought together representatives of rail industry management, labor, and the FRA, and facilitated mutual understanding of their diverse perspectives. Stakeholders have developed an integrated demonstration program documented in a model Memorandum of Understanding published in April 2005.

Behavior-based safety (BBS) is a proactive process that identifies and observes safety-critical behaviors and provides positive peer-to-peer feedback. It can also be used to identify and mitigate organizational barriers to safe behavior, such as work environment factors, policies, or procedures. Dr. Joyce Ranney of the Operator Performance and Safety Analysis Division leads a Volpe team that supports the FRA in assessing BBS for use in railroading. The goal of this work is twofold: to evaluate individual demonstration projects that apply specific BBS methodologies, and to investigate broader issues, such as implementation, cost, and feasibility, that could influence industry-wide BBS application.

Convective weather, such as thunderstorm activity, impacts aviation traffic congestion as well as safety.

Thunderstorm Nowcasting: Developing New Ways to Use Lightning Data (FAA)

The Volpe Center is a major innovator in the use of lightning data for automating the reporting of thunderstorms as well as for determining how thunderstorms affect aviation. At this year's American Meteorological Society Annual Meeting, where researchers discussed the effectiveness of new uses of lightning data in detecting and tracking convective storms, Dr. Thomas Seliga of the Surveillance and Assessment Division delivered a paper titled "Thunderstorm Nowcasting and Climatology using Cylindrical Hovmöller Diagrams: An NLDN Application." The paper, co-authored with

a staff member of TITAN/SRC, describes work done in support of the Federal Aviation Administration (FAA) in developing potential new ways to use lightning data collected by the National Lightning Detection Network (NLDN). NLDN data signify the occurrence of cloud-to-ground lightning flashes and represent the occurrence of thunderstorms throughout the contiguous United States. The Center has analyzed NLDN data for over 13 years, primarily in support of the FAA's program to automate the detection and reporting of thunderstorms through the Automated Weather Observing Systems and the Automated Surface Observing Systems. A link to the report can be found at *http://www.volpe.dot.gov/library/pp05.html*.

The paper demonstrates the potential for using cylindrical coordinate Hovmöller diagrams, also known as polar Hovmöller diagrams, for examining the behavior and spatial characteristics of lightning flashes during thunderstorms near airports (or other points of interest). Characteristics of storm behavior, such as onset, decay, duration, intensity, and radial and angular velocities, may be gleaned from these diagrams. Although not directly addressed in this study, the ability to combine temporal and spatial representations of storm activity in various forms—including varying Hovmöller diagrams, spatial portrayals, and loop replays of time sequences—should contribute to a better empirical understanding of storm behavior and its governing physics.

Enhancing the Safety Performance Analysis System (FAA)

SPAS monitors performance measures and calls attention to deviations from normal patterns. Volpe developed and continues to enhance this decision support tool in collaboration with FAA users.

The FAA Flight Standards Service (AFS) is responsible for certification of air operators, air agencies, and air personnel, and for implementing and enforcing the federal regulations that help ensure the safety of passengers using commercial air operators. AFS's primary tool for data access and analysis is the Safety Performance Analysis System (SPAS); FAA aviation safety inspectors worldwide use SPAS to assess information about aviation certificate holders (air operators, repair stations, aviation schools, airmen, etc.). As such, it is an important part of FAA's systems safety initiative.

The Volpe Center has been responsible for the development of SPAS since the system's inception in 1991, and the Center's Aviation Safety Division supports ongoing enhancement based on user needs and technological advances. On February 25, 2005, Volpe deployed SPAS Release 2.16.104, which incorporates improved capabilities such as the integration of information from the latest version of the Air Transportation Oversight System.

In a related effort, on behalf of the FAA William J. Hughes Technical Center, the Volpe Center delivered a final document titled *Concept for a Future SPAS, Entrenching System Safety Principles Across the FAA's Aviation Safety Group,* to the agency's System Approach to Safety Oversight Program Office on February 16, 2005. The document describes how next-generation SPAS will serve as the primary risk analysis and decision-support system for the

entire FAA Office of Aviation Safety (AVS). Intended to provide a practical foundation for future development and program management by envisioning SPAS use five to ten years from today, it provides concrete examples of AVS personnel utilizing SPAS in an environment of FAA-industry collaboration and adherence to system safety principles. Employing a series of "day-in-the-life-of …" narratives, it demonstrates how data-mining techniques, automated workflow functionality, and other cutting-edge SPAS features could be used to support aviation safety decisions.

Developing a Deicing Decision Support Tool (NASA)

The Volpe Center is supporting the National Aeronautics and Space Administration (NASA) in the development and application of the Dynamic Runway Occupancy Monitoring System (DROMS). DROMS collects surface surveillance data, weather data, and airline flight data, then computes the runway occupancy times for all arriving and departing aircraft and stores them in a database. The Surveillance and Assessment Division is analyzing the effect of different parameters such as aircraft type, weather, and airport configuration on runway occupancy times of arrivals and departures for Memphis International Airport (MEM) and at Detroit Metropolitan Wayne County Airport (DTW). As well, Volpe is employing DROMS data in more focused analyses addressing the time required for aircraft deicing and the ability to predict gate arrival times for aircraft 60 miles from the airport. Volpe's work is conducted in conjunction with the FAA Air Traffic Organization Terminal Sector.

As an application of DROMS data to real-time operations, a Volpe team developed the Deicing Decision Support Tool, which was demonstrated at DTW beginning January 2005. The deicing tool will enable DTW airport and Northwest Airlines (NWA) personnel to more efficiently manage aircraft moving through the deicing stations at DTW. NASA and NWA ramp controllers participated in the demonstration. The tool was installed in the NWA ramp tower for use and evaluation by ramp controllers to determine its efficacy and any needed modifications.

As a result of the successful evaluation, Volpe met with representatives from a leading vendor in airport surface surveillance hardware and NWA to discuss the possibility of transferring the technology to the commercial world. To officially mark the transition, a forum is being planned to showcase the deicing tool to representatives from government, industry, and airlines.

The Volpe team, lead by Dr. Michael Geyer, Chief of the Surveillance and Assessment Division, includes Mr. Anastasios Daskalakis, Dr. Jonathan Lee, and Ms. Suzanne Chen, all of the Division.

Deicing procedures associated with snowstorms can cause delays in flight schedules. At Detroit Metropolitan Wayne County Airport (DTW), a Volpe team demonstrated the efficacy of a deicing decision support tool that helps airline dispatchers or air traffic controllers efficiently manage the deicing of outbound flights in order to reduce schedule disturbances. Two major DTW deicing pads were studied in the course of tool development; part of one pad is shown above.

Security

Assessment of Hazardous Waste Shipment Tracking System (DOE)

The Volpe Center recently delivered a final report, "DOE Shipment Tracking System Assessment," to the Department of Energy (DOE) Director of the Office of Transportation in the Office of Environmental Management. The DOE has worked for more than 20 years with state and tribal governments to develop transportation programs for safely moving the nation's hazardous wastes to storage sites. Accordingly, the DOE developed the Transportation Tracking and Communications (TRANSCOM) system to monitor and communicate with vehicles transporting "high-visibility" unclassified shipments of radioactive and hazardous chemical waste. TRANSCOM is a Web-based system that provides in-transit monitoring information needed by state and tribal governments.

Given the advances in tracking technologies in recent years, the DOE asked the Volpe Center to assess the functional effectiveness of TRANSCOM and determine whether other tracking systems, methods, or applications might be more cost effective than the current TRANSCOM system in fulfilling its mission.

Volpe's assessment included: an examination of the DOE business process of monitoring radioactive shipments; discussions with DOE shippers, state and tribal governments, and other users of the TRANSCOM system; and a review of current practices, systems, and state-of-the-art technology in shipment tracking in private industry and other parts of the federal government. The Volpe team found that TRANSCOM does meet its functional requirements and has a large number of satisfied users, and recommended that the system be fully maintained, updated, and improved to meet current and future DOE requirements. Ms. Ruth Hunter, Ms. Nancy A. Cooney, and Mr. Kenneth Troup (now retired) of the Office of Information and Logistics Management contributed to the report.

The Department of Energy asked the Volpe Center to assess TRANSCOM, the tracking system that is used to monitor and communicate with vehicles transporting "high-priority" unclassified shipments.

Volpe Contributes to TRB Annual Meeting

The Transportation Research Board's (TRB) 2005 Annual Meeting drew nearly 9,000 transportation professionals from around the world to Washington, D.C. from January 9–13, 2005. The Volpe Center was well represented in this diverse group of researchers, academics, administrators,

and others from government and industry. Volpe staff presided over 10 sessions or meetings, delivered 16 papers or presentations, and developed and staffed DOT's Small Business Innovation Research Program exhibit, RSPA's University Transportation Center's exhibit, and DOT's Technology and Innovation exhibit. The spotlight theme for this year's 84th Annual Meeting was *Transportation from the Customer's Perspective: Providing a Safe, Secure, and Integrated System.*

The TRB meeting may be the world's largest transportation forum. With every mode of transportation represented, it is an ideal venue for the Volpe Center to share its knowledge and perspective. Volpe participants covered a number of broad areas, including safety, environmental stewardship, and security; specific topics ranged from operator fatigue assessment, rail performance measurement, railroad systems, transportation economics, and transportation planning.

Safety

- Mr. Greg Ayres and Dr. Bruce Wilson of the Advanced Safety Technology Division presented **"Identifying Control Loss Conflicts in Field Operational Test Data."**
- Dr. Lawrence C. Barr of the Advanced Safety Technology Division and Dr. C. Y. David Yang, formerly of the Volpe Center, presented **"Assessment of Driver Fatigue, Distraction, and Performance in Naturalistic Setting."**
- Ms. Anya A. Carroll, Acting Division Chief of the Railroad Systems Division, presided over the Highway-Rail Grade Crossings Committee as well as the session **"Highway-Rail Grade Crossings: Part 2 Evaluation Experiences."**
- Mr. Robert M. Dorer, Acting Deputy Director of the Office of Safety and Security, presided over the **Guided Intercity Passenger Transportation Committee.**
- Dr. David Jeong of the Vehicle Crashworthiness Division and Mr. Jeffrey Gordon of the Structures and Dynamics Division presented **"Effect of Longitudinal Rail Force on Rail Defect Behavior and Management."**
- Dr. Jordan Multer of the Operator Performance and Safety Analysis Division presided over the Vehicle User Characteristics Committee session on near-miss reporting and presented **"Benefit of Close-Call Reporting for Railroad Industry."**
- Mr. Daniel Parent, Dr. Benjamin Perlman, and Mr. David Tyrell of the Structures and Dynamics Division presented **"Evaluating Abdominal Injury in Workstation Table Impacts."** Peter Matthews of AEA Technology Rail contributed to the presentation.
- Dr. Stephen Popkin of the Operator Performance and Safety Analysis Division presented **"Nonprescriptive Tools to Reduce Operator Fatigue."**
- Dr. Thomas B. Sheridan of the Operator Performance and Safety Analysis Division presented **"New Method for Rating Severity of Transportation Close Calls."**
- Mr. Andrew Sluz of the Structures and Dynamics Division presented **"Rail Stress Management on Union Pacific Railroad Based on Remote-Sensing Technology."** William GeMeiner of Union Pacific Railroad Company contributed.
- Dr. Scott Smith of the Service and Operations Assessment Division presented **"Axle Weight Regulation of Transit Buses and Motorcoaches,"** which was co-authored by Dr. John Brewer of the Vehicle Crashworthiness Division and Dr. Doug Lee of the Economic and Industry Analysis Division.
- Dr. Theodore Sussmann of the Structures and Dynamics Division presented **"Track Substructure Diagnostic Measurements."** Willem Ebersohn of the National Railroad Passenger Corporation contributed to the presentation.

- Dr. C. Y. David Yang, formerly of the Volpe Center, presided over the session Advanced Traveler Information Systems (ATIS) Joint Subcommittee. Dr. Yang and Dr. Wassim Najm of the Advanced Safety Technology Division, presented **"Planning Field Operational Test for Signal Violation Warning System: Lessons Learned from Drivers' Red-Light Running Behavior."**

Environmental Stewardship

- Dr. Judith L. Rochat of the Environmental Measurement and Modeling Division presided over the **Highway Noise and Vibration Subcommittee.**

Security

- Mr. Robert Hoaglund, Certified Protection Professional of the Infrastructure Protection and Operations Division presented **"Innovative Security Technologies for Transport of Milk,"** which was based on a paper written by Mr. Hoaglund and Mr. Joseph Koziol of the Technology Applications and Deployment Division.
- Mr. Matthew Rabkin of the Planning and Policy Analysis Division presented **"FHWA Transportation Security Professional Capacity Building Program."** Mr. John A. Gerner of the Federal Highway Administration contributed to the presentation.

Economics

- Dr. Doug Lee of the Economic and Industry Analysis Division presided over two sessions: **"Cost Estimation for Planning and Policy: What Is a Cost?"** and "Impacts of Transportation Investment: Benefits or What?" He also presided over the TRB Transportation Economics Committee, which he chairs.
- Dr. Don Pickrell of the Office of System and Economic Assessment presented **"How Costs Can Turn into Benefits."**

Published and Presented

- **Acoustic Characterization of Wake Vortices.** Mr. Hadi Wassaf and Dr. Frank Y. Wang of the Surveillance and Assessment Division Wake Turbulence Team co-authored a paper titled "Acoustic Characterization of Wake Vortices in Ground Effect," presented by Dr. Wang at the annual winter meeting of the American Institute of Aeronautics and Astronautics in Reno, Nevada, January 12–15, 2005. Additional coauthors are two undergraduate students from the Aerospace Engineering Department of the Massachusetts Institute of Technology (MIT). The paper reports on a joint Volpe-MIT exploratory study at Logan International Airport to measure the acoustic signal emitted by aircraft wake vortices at the runway threshold area.
- **Metrics of Communications Performance.** Dr. Kim Cardosi and Ms. Amanda DiFiore of the Operator Performance and Safety Analysis Division coauthored "Metrics of Communications Performance," the lead article of the January 21, 2005 issue of *Air Traffic Control Quarterly* on aviation communication metrics (Volume 12, Number 4). Metrics of voice communication between air traffic controllers and pilots are important indices of the performance of the National Airspace System. The article summarizes the results of research conducted at the Volpe Center and other research that examines various aspects of aviation voice communications and the implications for system safety and future enhancements.
- **Human Factors in Railroad Operations.** Dr. Thomas Sheridan of the Operator Performance and Safety Analysis Division and Dr. Edward J. Lanzilotta of the Human-Machine Systems Laboratory at the Massachusetts Institute of Technology co-authored two FRA reports published in January 2005, which are available at http://www.volpe.dot.gov/opsad/pubs.html.
  - *Human Factors Phase III: Effects of Train Control Technology on Operator Performance,* DOT-VNTSC-FRA-05-01; DOT/FRA/ORD-04/18.

  - *Human Factors Phase IV: Risk Analysis Tool for New Train Control Technology,* DOT-VNTSC-FRA-05-02; DOT/FRA/ORD-04/17.

- **Consensus Rulemaking.** Mr. David Tyrell of the Structures and Dynamics Division co-authored "Consensus Rulemaking at the Federal Railroad Administration: All Aboard for Railway Safety Measures," *TR News,* No. 236, January-February, 2005. Grady C. Cothen, Jr., Acting Associate Administrator for Safety at the Federal Railroad Administration (FRA), is the primary author of the paper. Christopher F. Schulte, FRA Railroad Safety Specialist, and Jeffrey D. Horn, FRA Senior Industry Economist, are also co-authors.

- **ITS and Truck Parking.** Dr. Scott Smith of the Service and Operations Assessment Division, Mr. William Baron of the Infrastructure Protection and Operations Division, Mr. Kevin Gay of the Motor Carrier Safety Assessment Division, and Mr. Gary Ritter of the Service and Operations Assessment Division produced a report for the Federal Motor Carrier Safety Administration titled "Intelligent Transportation Systems and Truck Parking," published February 2005. FMCSA-RT-05-001. The report is available at *http://www.fmcsa.dot.gov/facts-research/briefs/intelligent-transportation-truckparking.htm.*

- **Biometrics for Entry Point Screening.** Mr. William Baron of the Infrastructure Protection and Operations Division presented "Authenticating Passengers While Inside Moving Vehicles: Using Biometrics for Entry Point Screening and Border Security" at the Winter 2005 Biometrics Summit, held February 23–25, 2005, in Miami, Florida. The presentation described several tests involving vehicle passenger authentication and the lessons learned from them.

- **Quiet Pavement.** Dr. Judith Rochat of the Environmental Measurement and Modeling Division presented "Quiet Pavement Research and Applications" on February 5, 2005, at the Annual Meeting of the Rubber Pavement Association in Reno, Nevada.

- **IEEE/ASME Joint Rail Conference.** Several Volpe presentations were made at the American Society of Mechanical Engineers/Institute of Electrical and Electronics Engineers (ASME/IEEE) Joint Rail Conference, held March 16–18, 2005, in Pueblo, Colorado.

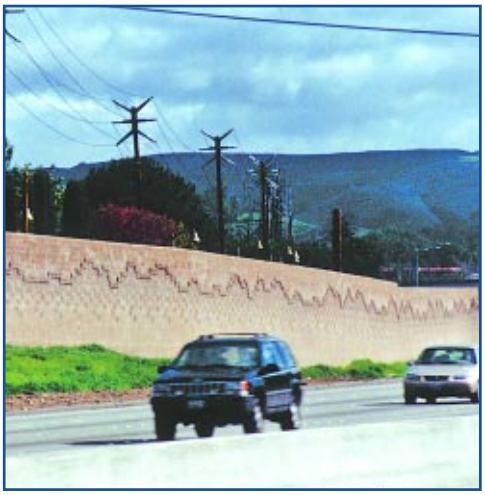
  - "Impact Resistance of Rail Vehicle Window Glazing and Related Safety Issues," Mr. James Lamond of the Railroad Systems Division, Mr. Tom Tsai of the Federal Railroad Administration, and Mr. Sam Liao of Parsons Brinckerhoff Quade and Douglas.

  - "Preparations for a Train-to-Train Impact Test of Crash-Energy Management Passenger Rail Equipment," Mr. David Tyrell, Ms. Karina Jacobsen, Dr. Benjamin Perlman, and Mr. Daniel Parent, all of the Structures and Dynamics Division. RTD2005-70045.

  - "Review of Severe Deformation Recommended Practice Through Analyses - Comparison of Two Cab Car Frame Designs," Mr. David Tyrell, Mr. Eloy Martinez, and Mr. John Zolock, all of the Structures and Dynamics Division, and Mr. Jacques Brassard of Bombardier. RTD2005-70043.

  - "The Influence of Train Types, Car Weight, and Train Length on Passenger Train Crashworthiness," Ms. Michelle Priante, Mr. David Tyrell, and Dr. Benjamin Perlman, all of the Structures and Dynamics Division. RTD2005-70042.

- **Human Factors in Transportation.** Ms. Mary Lee presented "Planes, Trains, Automobiles, and People: Examples of Human Factors in Transportation," at the 31st Annual National Convention of the National Society of Black Engineers, held in Boston, Massachusetts, March 23–27, 2005.



Typically, noise barriers along highways are used to reduce traffic noise propagating into neighboring communities. The Volpe Center Acoustics Facility is conducting research to determine the benefits of "quiet" pavements, which may reduce tire/road noise at the source.

Dr. Ashok Kaveeshwar: First RITA Administrator

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sworn in by Transportation Secretary Norman Y. Mineta on July 11, 2005. "The goal in creating RITA is to have a focused research agency, which is part Silicon Valley entrepreneurial company and part university research lab. By forming innovative partnerships with transportation-related industries, government agencies, and other public and private stakeholders, RITA will be more effective in coordinating research to more efficiently address the transportation needs of the 21st century," said Secretary Mineta. "Dr. Kaveeshwar's diverse experience, from managing successful high-technology companies to performing cutting-edge scientific research, makes him uniquely suited to carry out this vision."

Dr. Kaveeshwar has 35 years of experience in high-technology companies providing research and technology development to a wide range of federal agencies. He most recently served as president of Orange Technologies, Inc., a small business that provides information technology to government and commercial customers. From 1998 to 2002, Dr. Kaveeshwar served as Senior Vice President of Raytheon Technical Services Company, where he was responsible for leading the Scientific and Technical Services Division with more than 4,000 employees worldwide.

Previously, Dr. Kaveeshwar served as President and CEO of Hughes STX Corporation, a subsidiary of Hughes Electronics Corporation, where he led the successful integration of an independent company into a large aerospace and defense corporation.

"I would like to thank President Bush for giving me this opportunity to serve as RITA's first administrator, and I am excited to be able to work with Secretary Mineta, the RITA team, and our partners throughout DOT to develop a focused research and technology agenda that will move our nation's transportation system forward in the 21st century," said Dr. Kaveeshwar. "I look forward to helping RITA live up to its mission of identifying and facilitating solutions to the challenges and opportunities facing America's transportation system."

"The Volpe Center is integral to achieving this mission," Dr. Kaveeshwar stated. "With extensive experience in research and analysis for all transportation modes, significant knowledge of advanced systems technology, and a thorough understanding of the social value and impact of transportation, the Center is a valuable member of the RITA team."

The Volpe Center stands ready to support Dr. Kaveeshwar as he leads RITA into a new era of transportation innovation.

Director's Notes

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larger questions even as we focus on specific problems.

As the transportation field evolves, problems and their solutions become more complex. The rapid introduction of new structures, materials, technologies, and operational practices has necessitated a prompt response from transportation researchers, and the research requirements to support these changes have become more intricate. The Volpe Center's flexible structure has enabled us to integrate resources to address these emerging issues. Over time, clusters of technical specialists from various disciplines have come together to address issues that affect multiple modes of transportation.

Selected examples of cross-cutting technical capability teams include: biomechanics, environmental policy and remediation, navigation technologies, human factors, information technology systems, professional capacity building, safety data analysis, traffic management, and transportation planning. By leveraging these teams, the Center promotes synergy and is able to provide benefits to multiple modes.

This issue of *Highlights* introduces a relatively new cluster of capabilities in organizational development. This discipline focuses on the huge demands that rapid change puts on an organization and its people, and presents ways to address those changes effectively. The Focus article describes ways in which this discipline can help government agencies, and provides specific examples of targeted approaches to solving organizational problems. Future Focus articles will address the work of other cross-cutting capability teams.

Volpe National Transportation Systems Center

55 Broadway
Cambridge, MA 02142-1093

FOR MORE INFORMATION

Call: 617.494.2224
Fax: 617.494.2370

e-mail: MurrayL@volpe.dot.gov

http://www.volpe.dot.gov