Advanced Vehicle and Information Network Systems Center of Innovation

Volpe National Transportation Systems Center
U.S. Department of Transportation
Research and Innovative Technology Administration

Innovation for a Nation on the Move

Trends and Issues

Advanced vehicle and information network systems for transportation encompass a broad range of wireless communications-based information and electronics technologies. When integrated into the transportation system, these technologies improve safety, relieve congestion, improve safety, and enhance American productivity. Today's movement toward open standards and networks for major transportation infrastructure investments increases the likelihood of long-term interoperability and inclusion of rapidly evolving new wireless standards. These developments present promising opportunities for innovation.

COI Profile

The Advanced Vehicle and Information Network Systems COI provides systems engineering and analysis, operations research and related capabilities to identify, assess, and deploy advanced technologies and new operational strategies to reduce the frequency and consequences of transportation-related crashes. Assesses alternative approaches for overcoming institutional, financial, technical, and other barriers to the deployment of Intelligent Transportation Systems (ITS) at the local, regional, and national level. Has been at the vanguard of research, development, and deployment of ITS for more than 20 years.

Project Snapshots

• Conducted pilot tests for the National Highway Traffic Safety Administration (NHTSA) of sensors that anticipate and warn drivers of crash risks associated with lane changes and roadway departures. Deployment

Volpe Center

and use of advanced onboard sensors and telematics can significantly improve the safety of passenger vehicles and trucks.
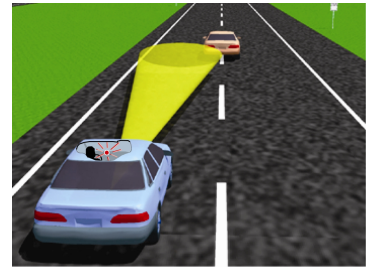
• Performed analyses of the current state of the vehicle rollover problem for NHTSA, evaluating recent trends in crashes, and assessing the effectiveness of newer vehicle safety features. Rollover crashes represent a disproportionately large number of highway fatalities.

• Defined for the ITS Joint Program Office (JPO), the target crash problem and estimating benefits for vehicle-to-vehicle communications and vehicle-positioning technology.

• Developed the SafeTrip-21 program for the Research and Innovative Technology Administration (RITA) and JPO. SafeTrip-21 expands the Vehicle Infrastructure Integration (VII) program and integrates a wide variety of ITS information, navigation, and communication technologies into field tests to improve safety and alleviate congestion.

Volpe Center

Volpe Center

• Supports the U.S. DOT and Federal Emergency Management Agency (FEMA) in emergency response and long-term recovery efforts following natural disasters such as hurricanes, earthquakes, and terrorist attacks, serving as a liaison and coordinator for DOT, FEMA, and other Federal agencies participating in recovery efforts, and as a U.S. DOT regional emergency transportation representative.

• Developed an *Innovation Roundtable on Advanced Wireless Communication for the Transportation Sector* on behalf of RITA—a landmark forum on how to enable Internet and wireless communications technologies to better allow vehicle-to-vehicle, vehicle-to-infrastructure, and infrastructure-to-system manager communications in order to avoid crashes and improve situational awareness.

• Provided technical assistance in the use and promotion of the travel demand modeling tool in support of FHWA's Transportation Analysis Simulation System (TRANSIMS) program.

Volpe Center

• Assisted the U.S. National Park Service (NPS) in multimodal analyses of congestion and developed alternative transportation and wayfinding systems, including evaluating ITS applications and innovative financing. The multimodal expertise of the Volpe Center helped the NPS to plan and implement economically and environmentally sustainable transportation systems.

• Provided support to the ITS Joint Program Office since 1994, including the development of program plans, the creation of websites, and development of a professional capacity building program.

Volpe Center

About the Research and Innovative Technology Administration

The Research and Innovative Technology Administration (RITA) coordinates U.S. DOT's research programs and is charged with advancing the deployment of cutting-edge technologies to improve our Nation's transportation system. RITA was established as a U.S. DOT Operating Administration pursuant to the Norman Y. Mineta Research and Special Programs Improvement Act of 2004.

About the Volpe Center

An innovative, Federal, fee-for-service organization, the Volpe Center, part of the U.S. DOT's RITA, is an internationally recognized center of transportation and logistics. The Volpe team represents a world-class transportation resource with multidisciplinary expertise in all modes of transportation. The Volpe Center plays a unique role in looking across the transportation enterprise to anticipate future transportation issues and challenges. The Center also has a highly skilled team of acquisition professionals. For nearly 40 years, the Volpe Center has lent critical support to all U.S. DOT's modal administrations and offices, other Federal agencies, state and local governments and organizations, foreign governments and entities, and the private sector.

The Volpe Center is organized into eight Centers of Innovation (COI). Each COI applies its technical capabilities to U.S. DOT strategic goals and national transportation priorities. The COIs expand U.S. DOT's horizon and show how innovation can arise from creative and collaborative use of internal and external assets. The COIs include:

• **Multimodal Systems Research and Analysis**

• **Safety Management Systems**

• **Environmental and Energy Systems**

• **Freight Logistics and Transportation Systems**

• **Physical Infrastructure Systems**

• **Communication, Navigation, Surveillance (CNS) and Traffic Management Systems**

• **Human Factors Research and System Applications**

• **Advanced Vehicle and Information Network Systems**

For more information

Name: Anne Aylward
Acting Director, Center of Innovation for Advanced Vehicle and Information Network Systems
Email: Anne.Aylward@dot.gov
Phone number: 617-494-2191

http://www.rita.dot.gov
http://www.volpe.dot.gov