Research Goals:

• Identify transformative applications and innovative methods to manage and operate transportation systems based on the availability of new data sources and communications methods.
• Build on application data integration foundation to transform the data into information that can provide travelers and system operators greater access to real-time information about the transportation system to enable better decision making.

Research Outcomes:

Identify transformative applications and innovative methods to manage and operate transportation systems based on the availability of new data sources and communications methods.

Examples of Multimodal Dynamic Mobility Applications:

• Measurement and prediction of system performance using probe data generated through DSRC and non-DSRC technologies.
• Increasing intersection safety and efficiency through traffic signal phasing and timing and geospatial information technology.
• Road weather management applications to respond to or anticipate the effects of weather on roads, thus increasing mobility and safety.
• Transit management and freight operations to increase efficiency, thus reducing costs and congestion.
• Dynamic, real-time route planning and adjustments to emerging incidents.
• Advanced parking management systems and integrated corridor management.

Research Plan

The objective of the Dynamic Mobility Applications program is to foster the development of open-source applications that use multi-source ITS data to transform surface transportation management and information. The research conducted in this program will identify high-value applications for research and develop the tools, metrics, and concepts that form the foundation for future application development.

The applications that have been and will be evaluated are those that enable public-sector, multimodal system management and:

• Use vehicle and infrastructure connectivity and data to enable dynamic decision making
• Allow traffic managers to anticipate problems, be proactive in addressing issues, and rapidly monitor impacts on and across multimodal transportation networks
• Support emerging work in decision support systems, which can assimilate and analyze large volumes of detailed real-time and historic data to provide recommendations in formats that are most valuable to traffic managers or travelers
Initial Steps in the Research Program

- Define multimodal performance metrics that form the basis for decision support systems, tools, and models
- Collect real-time data for assessment (to include collaboration with the Real-Time Data Capture and Management program)
- Assess data from historical and real-time traffic and travel behavior perspectives to understand which types of multimodal data enable dynamic, proactive decision making
- Identify which public-sector, multimodal dynamic applications might be of highest value and use demonstrations to test the validity of those assumptions with stakeholders

Research Tracks

- **Track 1:** Engage stakeholders for input across all phases, from foundational analysis to focused demonstrations.
- **Track 2:** Conduct program planning and coordination including fundamental research and development, institutional policy, and standards that will ultimately enable public and private sector. Applications development application impact assessments, while using communications across interoperable platforms.
- **Track 3:** Conduct applications development and testing for the standards, algorithms, tools, and protocols that will be needed for implementation of the applications.
- **Track 4:** Conduct focused demonstration and analysis based on a partnership with the Real-Time Data Capture and Management and the AERIS (Applications for the Environment: Real-time Information Synthesis) programs to demonstrate applicability in a market-based environment and assess quantifiable benefits. This track includes conducting a near-term demonstration of market-ready technologies and applications.
- **Track 5:** Develop evaluation and performance measures that address the performance of both the applications developed, and the program itself.
- **Track 6:** Coordinate outreach and technology transfer to inform the transportation community on the activities of the program, and share findings and procedures with stakeholders.

For more information about this initiative, please contact:

**Katherine K. Hartman,** Program Manager
Research and Innovative Technology Administration
ITS Joint Program Office | (202) 366-2742
kate.hartman@dot.gov | www.its.dot.gov

**Robert Rupert,** Traveler Information Management Team
Office of Transportation Management
Federal Highway Administration | (202) 366-2194
robert.rupert@dot.gov | www.its.dot.gov

**Steven Mortensen,** Office of Mobility Innovation
Federal Transit Administration | (202) 493-0459
steven.mortensen@dot.gov | www.its.dot.gov

**Randy Butler,** Freight Technology Manager
Office of Freight Management and Operations
Federal Highway Administration | (202) 366-9215
randy.butler@dot.gov | www.its.dot.gov