



Photo Source: Thinkstock

# DYNAMIC MOBILITY APPLICATIONS



The vision of the Dynamic Mobility Applications program is to expedite the development, testing, commercialization, and deployment of innovative mobility applications, fully leveraging both new technologies and federal investment to transform transportation system management, maximize the productivity of the system, and enhance the accessibility of individuals within the system.

The Dynamic Mobility Applications program is a multimodal initiative led by the Intelligent Transportation Systems Joint Program Office (ITS JPO) within the U.S. Department of Transportation (USDOT) Research and Innovative Technology Administration (RITA). The USDOT focuses on making surface transportation safer, smarter, and greener by leveraging wireless technology capabilities in an interoperable communications network environment to provide safety, mobility, and environmental benefits to the transportation community and the traveling public.

Dynamic mobility applications capitalize on vehicle and infrastructure connectivity such as data from vehicle probes and other real-time data sources, using dedicated short-range communications (DSRC) and other wireless communications methods. The vision for dynamic mobility applications research is to provide significant improvements to mobility and accessibility by introducing innovative methods for operating existing transportation systems based on the availability of new data sources and communications methods, and by creating opportunities for greater integration across modes (e.g., light vehicles, transit vehicles, and heavy commercial vehicles).

## 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

## 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 realtime 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.



U.S. Department of Transportation

**Research and Innovative Technology Administration**



Photo Source: Thinkstock

## 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



Photo Source: Thinkstock

**Dynamic Ridesharing:** Makes the logistics of ridesharing easier by enabling our smartphones and the voice-activated devices in our vehicles to do the matching for us—authenticating the users, connecting riders with drivers, and processing the transaction.



Photo Source: Thinkstock

**Queue Warning:** Monitors real-time traffic data for the presence of a queue ahead, alerts motorists to reduce speeds, and provides target speeds by lane and location.

## 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