Next Generation Mobility Choices
Enabled by Connected Vehicle Research

TRB ABE60 (2) Accessible Transportation Technology Subcommittee Meeting

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Mobility Services for All Americans (MSAA)

From where we were...

Moving forward....
MSAA Structure and Status

Stakeholder Engagement

TMCC Technical Assistance

TMCC Demo Phase 1 (System Planning & Design)
- FY 07-08

TMCC Model Deployments
- Aiken, SC
- Camden, NJ
- Paducah, KY
- FY 09-13

TMCC Phased Implementation
- Fitchburg, MA
- Kent, OH
- Louisville, KY
- Orlando, FL
- FY 09-13

MSAA Knowledge & Technology Transfer (KTT)
- TMCC Institutional Evaluation
- TMCC Independent Impacts Evaluations
- TMCC “How-To” Guidebook
- TMCC Functions Standardization
- FY 09-13

FY 13/14 MSAA Deployment Planning Grant Program

MSAA Technical Services Support

FY05 - FY06

MSAA Foundational Research

FY 07-08

FY 09-13

FY 09-13

U.S. Department of Transportation
Connected Vehicle Research encompasses a suite of technologies and applications that use wireless communications to provide connectivity:

- Among vehicles of all types
- Between vehicles and roadway infrastructure
- Among vehicles, infrastructure, and wireless consumer devices

All Roads, All Modes, All The Time
Connected Vehicle Environment
Connected Vehicle Program Structure

Applications
- Safety
  - V2V
  - V2I
- Mobility
  - Real-time Data Capture
  - Dynamic Mobility Apps
- Environment
  - AERIS
  - Road Weather Apps

Technology
- International Harmonization of Standards & Architecture
- Human Factors
- Systems Engineering
- Certification
- Test Environments

Policy
- Deployment Scenarios
- Financing & Investment Models
- Operations & Governance
- Institutional Issues
Transit Connected Vehicle for Mobility

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Connected Vehicle Research for Mobility

Real-time Data Capture and Management (DCM)

- Vehicle Status Data
- Infrastructure Status Data
- Weather Data
- Truck Data
- Wireless Device Data
- Transit Data
- Location Data

Dynamic Mobility Applications (DMA)

- Reduce Speed 35 MPH
- Weather Application
- Transit Connection Protection
- Real-Time Travel Info
- Fleet Management/Dynamic Route Guidance
- Signal Phase & Timing Adjusts Real-Time Conditions
- Safety Alerts and Warnings
- Real-time En-route Travel Apps

Data Environment
Integrated data environment further supports intermodal mobility management capability
Integrated Dynamic Transit Operations (IDTO) Bundle

- One of the six mobility application “bundles”
- Led by Federal Transit Administration
- Integrated transit operations that provide dynamic scheduling, dispatching, and routing of transit vehicles, and facilitate passenger connection protection and dynamic ridesharing:
  - Dynamic Transit Operations (T-DISP)
  - Connection Protection (T-CONNECT)
  - Dynamic Ridesharing (D-RIDE)
- Next-generation mobility management integrated, traveler-oriented services
Integrated Dynamic Transit Operations
Travelers make informed decisions/choices by broadcasting/receiving timely and accurate travel information, both pre-trip and en-route.

Traveler #1 is seeking a 3rd traveler for HOV-3 Lanes
Traveler #2 misses train-bus connection due to train delay
Travelers #3 joins Shareride HOV-3
Traveler #2 joins Demand Responsive Van
Travelers #2 & #4
Travelers #1, #3, & #5
M-ISIG Bundle with Transit

- Multiple-modal Intelligent Traffic Signal System
- Led by Federal Highway Administration (FHWA) with FTA participation
- Comprehensive traffic signal system for complex arterial networks (passenger vehicles, transit, pedestrians, freight, and emergency vehicles):
  - Transit Signal Priority (TSP)
  - **Mobile Accessible Pedestrian Signal System (PED-SIG)**
    - Intelligent Traffic Signal System (I-SIG)
  - Freight Signal Priority (FSP)
  - Emergency Vehicle Preemption (PREEMPT)
  - Connected Eco Driving (ECO)
Mobile Accessible Pedestrian Signal System (PED-SIG)

- Allows an “automated pedestrian call” to be sent to the traffic controller from any personal device of registered blind users after confirming the direction and orientation of the roadway that the pedestrian is intending to cross.
- Integrates information from:
  - roadside or intersection sensors
  - new forms of data from wirelessly connected pedestrian-carried mobile devices
- Communicates wirelessly with the traffic signal controller to obtain real-time SPAT information
- Informs the visually impaired pedestrian as to when to cross and how to remain aligned with the crosswalk.
Transit Connected Vehicle for Mobility
Next Steps

- Conduct IDTO Prototype Development/Testing (FY13/FY14)
  - Phase 1: intermodal ➔ Phase 2: interagency
  - Require very strong partnership with transit providers
- Evaluate IDTO effectiveness and impacts (FY13/FY14)
- Complete TMCC “how-to” guidebook (FY13)
- MSAA/TMCC standardization (FY13/FY14)
- MSAA deployment planning grants (FY13/FY14)
- Complete M-ISIG system requirements (FY13)
- Expand the horizon of MSAA in CV environment to include All Road, All Modes, All The Time
For More Information.....

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