EnableATIS and the DMA Program: An Overview

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Noblis

EnableATIS Stakeholder Workshop
October 27, 2011
Washington DC
Overview

- Background on the Dynamic Mobility Applications (DMA) Program
  - Program Vision and Objectives
  - Overview of Program Organization
  - High Priority DMA Applications and Bundles
  - Program Roadmap

- Role of the EnableATIS Bundle in the DMA Program
  - Why Operational Concept not Concept of Operations?
  - Finding an Appropriate Federal Role
  - Leveraging Market Forces
ITS Research = Multimodal and Connected

To Improve Safety, Mobility and Environment

Research 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

FCC Allocated 5.9 GHz Spectrum (DSRC) for Transportation Safety
Mobility Program

Real-time Data Capture and Management
- Vehicle Status Data
- Infrastructure Status Data
- Weather Data
- Truck Data
- Transit Data
- Location Data

Dynamic Mobility Applications
- Reduce Speed 35 MPH
- Transit Signal Priority
- Weather Application
- Real-Time Travel Info
- Fleet Management/Dynamic Route Guidance
- Safety Alerts and Warnings
- Signal Phase & Timing Adjusts Real-Time Conditions
Dynamic Mobility Applications Program

Vision
- Expedite development, testing, commercialization, and deployment of innovative mobility application
  - maximize system productivity
  - enhance mobility of individuals within the system

Objectives
- Create applications using frequently collected and rapidly disseminated multi-source data from connected travelers, vehicles (automobiles, transit, freight) and infrastructure
- Develop and assess applications showing potential to improve nature, accuracy, precision and/or speed of dynamic decision
- Demonstrate promising applications predicted to significantly improve capability of transportation system
- Determine required infrastructure for transformative applications implementation, along with associated costs and benefits

Project Partners
- Strong internal and external participation
  - ITS JPO, FTA, FHWA R&D, FHWA Office of Operations, FMCSA, NHTSA, FHWA Office of Safety

Transformative Mobility Applications
(May have more impact when BUNDLED together)
Transformative Application Bundles: Identification of Prioritization Approach

Goal
- Identify, with help of stakeholders, collection of applications for development and testing in Phase 2 of Program

Approach
- Solicit ideas for transformative applications
  - Initial request closed on 31 July; second call closed 15 October
  - More than 90 submittals, quantity and quality exceeded expectations
- Share concepts with our stakeholders throughout the process
- Refine concepts to a manageable set of consolidated concepts (33)
  - Consolidated concepts used in variety of exercises at Mobility Workshop, 11/30-12/1/10 and with other stakeholder groups
  - ITE Task Force, Transit stakeholders, Freight stakeholders
- Combine stakeholder and federal input to support program prioritization

Candidate Applications Prioritization Criteria
- Potential for transformative impact
- Makes use of connected vehicle data
- Significant stakeholder interest
Transformative Application Bundles: Bundling Rationale and Prioritization Process

- Consolidate input from external stakeholder groups, workshop
- Consider internal stakeholder priorities
  - Leveraging on-going or other planned research

**Group Applications into Bundles**
- Similar high-level data needs
- Interaction among applications predicted
- Evident value in concurrent development
- Encourage coordinated non-federal research activity

**Bundling increases transformational impacts and reduces costs of research and development**

- Resource-constrained prioritization process based on expected value of developing application bundles, as well as individual applications
  - Applications the program cannot fund at this time are still candidates for collaborative development with other programs or stakeholders

**High-Priority Application Bundles announced at TRB 2011**
DYNAMIC MOBILITY APPLICATIONS PROGRAM
DATA ENVIRONMENTS AND APPLICATIONS MAPPING SUMMARY

93 ideas → 30 applications → 7 bundles

Enable ATIS

ARTERIAL DATA ENVIRONMENTS

FREEWAY DATA ENVIRONMENTS

REGIONAL (INFO) DATA ENVIRONMENTS

FRATIS

CORRIDOR (CONTROL) DATA ENVIRONMENTS

IDTO

M-ISIG

INFLO

R.E.S.C.U.M.E

LEGEND

DMA PROGRAM FUNDED

DMA SUPPORTED (NOT FUNDED), OPEN TO OTHER PROGRAMS AND RESEARCHERS

*JOINTLY FUNDED BY DMA AND PUBLIC SAFETY PROGRAMS

U.S. Department of Transportation
# Dynamic Mobility Applications Program Roadmap

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<th>Program Activity Track</th>
<th>FOUNDATIONAL ANALYSIS PHASE 1</th>
<th>RESEARCH, DEVELOPMENT &amp; TESTING PHASE 2</th>
<th>DEMONSTRATION PHASE 3</th>
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<td><strong>Institutional and Policy</strong></td>
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<td>Standards Development and Testing</td>
<td>Standards Demonstration</td>
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<td>Deploy Open Source Portal</td>
<td>Maintain Open Source Portal</td>
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<td>State-of-Practice Tech Assessments</td>
<td>Develop and Refine Tools/Analytics For Impacts Assessment</td>
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<td>Prototype Application</td>
<td>Ph. 2 Applications Development</td>
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<td><strong>Testing</strong></td>
<td>Application Identification</td>
<td>Data Capture</td>
<td>Ph. 2 Applications Testing</td>
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<td><strong>Demonstrations</strong></td>
<td>Demo Coordination Planning</td>
<td>Connected Vehicle Demo(s)</td>
<td>Phase 3 Demo Planning</td>
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<td><strong>Evaluation</strong></td>
<td>Define Measures</td>
<td>Evaluation Planning</td>
<td>Phase 2 Apps Evaluation</td>
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<td><strong>Outreach</strong></td>
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### Decision Points

- **PH.2 DECISION POINT**
- **PH.3 DECISION POINT**

### Questions

- Do the candidate applications show enough promise to be tested?
- Do these applications address key performance measures?
- Do we understand the communications requirements of these applications?
- Are there clear and compelling arguments for deployments showing significant benefits?

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High-Level Roadmap v1.5 (5/9/2011)
## Dynamic Mobility Applications Program Phase 2: Research, Development and Testing

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<th>Program Tracks</th>
<th>FY2011</th>
<th>FY2012</th>
<th>FY2013</th>
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<td><strong>Track 1: Stakeholder Engagement</strong></td>
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<td><strong>Track 2: Program Planning and Coordination</strong></td>
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<td>2A: Fundamental Research and Development</td>
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<td>Build OS Portal</td>
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<td>2B: Institutional and Policy†</td>
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<td><strong>Track 3: Applications Development and Testing</strong></td>
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<td>Pooled Fund Study M-ISIG ConOps, SyRs and Field Test Plan</td>
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<td><strong>Track 4: Demonstrations</strong></td>
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<td>Safety Pilot Model Deployment Coordination†</td>
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<td><strong>Track 5: Evaluation and Performance Measures</strong></td>
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<td>Mobility Data Identification</td>
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<td><strong>Track 6: Communication and Technology Transfer †</strong></td>
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<td>Conduct Communication/Technology Transfer activities (Mob. App. Dev. Env., documented apps, fact sheets, calls for participation, wkshps, etc.) †</td>
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**LEGEND:**
- **Key Weather Program Intersection**
- **Decision point**
- **Milestones**
- **Completed**
- **Stakeholder meeting/workshop**
- **Completed**
- **Deliverables**
- **Open Source Applications †**
- **Joint activity with Data Capture and Management program**

**Questions:**
- Do the applications show enough promise in development to be implemented in regional deployments/demonstrations?
- Do the applications address the key mobility performance measures?
EnableATIS Project Timeline

- Workshop – October 27, 2011
- Workshop Summary – November 2011
- Draft Operational Concept – February 2012
- Final Operational Concept – April 2012
- Readiness Assessment – April 2012
- Wrap Up – May 2012
DMA Program:
Upcoming Key Milestones

- Implement the Open Source Portal – Early 2012
- Complete Bundle ConOps/OpCons – May 2012
- Re-Engage with Stakeholders on DMA Program Direction – Early 2012
- Develop Ph. 2 Integrated Research Plan – June 2012
- Procure and Initiate Development Activity for Selected DMA Bundles – September 2012
  - Challenges
  - Small Scale Field Tests
  - Simulation Studies
Questions?