IntelliDrive℠
Dynamic Mobility Applications Program

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Research and Innovative Technology Administration/ITS Joint Program Office

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IntelliDrive is a service mark of the U.S. Department of Transportation.
• Program Vision and Objectives
• Current Program Overview
• Guiding Principles
• Current Projects and Products
• Next Steps
• Questions
Program Vision and Objectives
IntelliDrive Mobility

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
- Weather Application
- Transit Signal Priority
- Real-Time Travel Info
- Fleet Management/Dynamic Route Guidance
- Signal Phase & Timing Adjusts
  - Real-Time Conditions
- Safety Alerts and Warnings
Vision
• Expedite development, testing, commercialization, and deployment of innovative mobility applications that:
  – 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 making by system managers and system users
• Demonstrate promising applications predicted to significantly improve capability of transportation system to provide safe, reliable, and secure movement of goods and people
Current Program Overview
# IntelliDriveSM Dynamic Mobility Applications Program High-Level Roadmap

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**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?**  

**LEGEND:**  
- Decision point  
- Program Activity  
- Data Feed  
- Open Source Applications
Projected Program Outcomes

- Multiple applications developed leveraging multi-source data
- Research spurs commercialization
- Applications enable transformational change
Guiding Principles
Guiding Principles

• Leverage multi-source data
• Develop and test mode-specific and multi-modal applications
• Feature open source application research and development
• Encourage competitive application commercialization
• Prioritize program resources based on expected impact
• Enhance analytical capabilities related to mobility applications
• Practice long-term technology stewardship
Leverage Multi-Source Data

• Leverage high-quality data integrated from mobile and fixed sources to develop multiple applications (mode-specific and multi-modal)
• Requires coordination with Real-Time Data Capture and Management program
Multi-Modal Applications Development and Test

- Coordinated development of mode-specific and multi-modal applications:
  - avoid duplication
  - cost-effective
Open Source Research and Development

- Research issue is too complex or big for isolated researchers to solve
- Promotes highest level of collaboration
- Preserves intellectual capital
- Serves to engage partners from academia and industry who may not be directly involved in funded applications development and testing

- Currently seeking to refine how best to structure open source agreements
  - maximize collaboration
  - without reducing innovation or endangering commercialization
Encourage competitive application commercialization
Prioritize resources based on expected impact

• Develop prototype mobility application that focuses on performance measures:
  – exploits new or integrated data sources
  – enhances traditional measures or creates new measures to capture full impact of mobility applications

• Prioritization of development and test of candidate applications:
  – applications must improve system productivity or user mobility
  – well-defined, quantitative performance measures (multi-modal or mode independent)
  – applications must have broad stakeholder interest and support
Enhance analytical capabilities

• Develop analytic tools and processes to accurately predict impacts:
  – assess long-term performance
  – use real-time prediction to support improved decision making by travelers, system managers and other transportation system stakeholders (e.g., fleet operators)

• Employ tools to refine and identify promising applications prior to committing resources for field testing or full demonstration
Practice long-term technology stewardship

“few probes, some sensors”

“some probes, some behavioral data, some sensors”

“most vehicles are probes, more behavioral data, some sensors”

DATA ENVIRONMENT + APPLICATIONS EVOLUTION

DATA ENVIRONMENT I

DATA ENVIRONMENT II

DATA ENVIRONMENT III
Keys to Success for IntelliDrive Mobility

- Facilitate easy, secure access to data environment and enable collaboration in mobility application development
- Accumulate and share intellectual capital while respecting IP rights
- Coordination with other IntelliDrive program areas and broader ITS programs
- Active interaction with broader group of stakeholders outside the federal research and development efforts
- Not a one-time engagement, will require ongoing collaboration to:
  - refine program goals
  - refine data needs
  - structure relevant and feasible data environment development efforts
  - prioritize applications development and testing
Current Projects and Products
Current Projects and Products

• Current Projects
  – Policy Assessment*
  – Standards Assessment*
  – Open Source Portal
    • USDOT Lead: Randy Butler (FHWA, Office of Freight)
    • Principal Investigator: Ron Schaefer (SAIC)
  – Decision Support Systems
    • USDOT Lead: Dale Thompson (FHWA R&D)
    • Principal Investigator: Dan Lukasik (Delcan)

• Available Program Products
  – Program vision, other documents on IntelliDrive website
  – Candidate mobility applications concepts site

*Joint activity with Data Capture and Management Program
Candidate Applications

Concepts

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

Approach
• Solicit ideas for transformative applications that improve decision making by system managers and users
  – Initial request closed on 31 July; second call closed 15 October
  – More than 90 submittals received
• Summaries are available on the web:
  – http://dma.noblis.org
• We will be using a consolidated version of these concepts during the upcoming breakouts in this workshop
Candidate Applications
Prioritization Criteria

• Potential for transformative impact
• Makes use of IntelliDrive data
• Significant stakeholder interest
  – Your input from this workshop is one measure of stakeholder interest
• Can evolve from near-term state to long-term state
• Potential to be released as open source
• Cross-modal impact
Next Steps
Upcoming Activities

- Precise nature, extent and timing are not yet known, however, the program expects to procure assistance in the following two areas:
  - Analytical Needs Assessment
    - Enhance current or develop new methods to estimate impacts of Phase 2 Applications
  - Applications Development and Field Testing
    - Develop concepts of operations and requirements for promising application concepts
    - Develop and document applications utilizing data environments
    - Consider inputs from stakeholders
    - This workshop is one example
    - Identify high-priority applications
      - Announcement planned for TRB 2011
Questions?