USDOT Perspective on Data Collection, Aggregation and Distribution

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Presentation Outline

➢ The Wireless Networked Environment
➢ The Real-Time Data Capture & Management Programs
➢ Data Environments
➢ Outcomes
➢ Getting Involved
Networked Environment

DATA IN, ACTIONABLE INFORMATION OUT

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

The Networked System

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

U.S. Department of Transportation
Research and Innovative Technology Administration
The U.S. DOT Mobility Program

Real-time Data Capture and Management

- Vehicle Status Data
- Infrastructure Status Data
- Weather Data
- Truck Data
- Transit Data

Data Environment

Mobility and Environmental Applications

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

Vision
• Active acquisition and systematic provision of integrated, multi-source data to enhance current operational practices and transform future surface transportation systems management

Objectives
• Enable systematic data capture from connected vehicles (automobiles, transit, trucks), mobile devices for passengers, and infrastructure

• Develop data environments that enable integration of data from multiple sources for use in transportation management and performance measurement

• Reduce costs of data management and eliminate technical and institutional barriers to the capture, management, and sharing of data
Creating a Data Environment

Data environment:

- **Well-organized** collection of data of specific type and quality

- Captured and stored at **regular intervals** from one or more sources

- **Systematically shared** in support of one or more applications
Key Issues in Defining A Data Environment

What Data Do We Capture?

How Do We Use The Data?

What Data Do We Keep?

How Do We Structure The Data?
Data Sources and Uses
Data Aggregation and Structure

AGGREGATION

STRUCTURE

AREA-WIDE AGGREGATION

AGGREGATION

RAW DATA

STANDARDS
QUALITY
ACCESS
IP
PRIVACY
STORAGE
REGULATION

STRUCTURE

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Data Structure

**Access:** Balance issue of open access of data with legitimate security concerns

**IP rights:** Ensure licensing restrictions of private sector data are preserved while making as much data as possible available without cost

**Standards:** “Tech neutral”
- Anticipated DCM-related Standards
- Relevant NTCIP, TCIP, Freight, IEEE, SAE & International Standards

**Storage:** Explore the concept of virtual warehousing in addressing storage requirements

**Regulation:** Address Data Ownership, Terms & Conditions

**Privacy:** Address concern about protecting the privacy of participants

**Data Quality:** Implement a data quality assurance matrix
Elements of Data Capture and Management

- **Meta data:**
  - Provision of *well-documented* data environment

- **Virtual warehousing:**
  - Supports *access to data* environment and forum for collaboration

- **History/context:**
  - Objectives of data assembly

- **Governance:**
  - *Rules* under which data environment can be accessed and *procedures* for resolving disputes
Projected Outcomes

• Establish one or more data environments
• Broad collaboration supporting data environment utilization
• Implementation of data management processes representing best practices
• Provide data resources through data.gov initiative

• Multiple applications developed leveraging multi-source data
• Research spurs commercialization
• Applications enable transformational change
Getting Involved

• Provide feedback on program direction, goals, data environment, mobility applications

• Respond to upcoming funded requests for research and development of mobility applications

• Seek to leverage the program’s data and applications resources in other non-federally funded research projects

• Offer new data sets and applications

• Actively commercialize mobility applications developed within the mobility applications program
For More Information…

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