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USDOT Probe Data Deployment Activities

SIS28: Utilizing Probe Data Will Create the Future of ITS

Carl Andersen
FHWA Office of Research, Development, and Technology
United States Department of Transportation
October 11, 2016
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• USDOT Connected Vehicle Deployment
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Connected Vehicle Safety Pilot

• Major road test and real-world implementation involving:
  • 73 miles of instrumented roadway with 27 roadside units in Ann Arbor, MI
  • Over 2,800 vehicles equipped with a variety of device types
  • Various V2V and V2I applications
  • Testing of prototype security and device certification processes
  • 1 year of data collection to support NHTSA agency decision
  • Data available on USDOT Research Data Exchange (RDE) website: https://www.its-rde.net/
Successfully Piloting Connected Vehicles
- Data collection exceeded expectations
- Regular drivers experienced proven technology
- Connectivity was achieved across various types and modes
- Reduced risks
Connected Vehicle Pilot Deployment

WYDOT

• Reduce the number and severity of adverse weather-related incidents in the I-80 Corridor in order to improve safety and reduce incident-related delays.
• Focused on the needs of commercial vehicle operators in the State of Wyoming.

NYCDOT

• Improve safety and mobility of travelers in New York City through connected vehicle technologies.
• V2V technology installed in up to 8,000 vehicles in Midtown Manhattan, and V2I technology installed along high-accident rate arterials in Manhattan and Central Brooklyn.

Tampa (THEA)

• Alleviate congestion and improve safety during morning commuting hours.
• Deploy a variety of connected vehicle technologies on and in the vicinity of reversible express lanes and three major arterials in downtown Tampa to solve the transportation challenges.
Connected Vehicle Pilot Deployment (cont.)

- Phase 1: Concept Development (COMPLETE)
  - Creates the foundational plan to enable further design and deployment
  - Progress Gate: Is the concept ready for deployment?

- Phase 2: Design/Deploy/Test (CURRENT PHASE- began September 1, 2016)
  - Detailed design and deployment followed by testing to ensure deployment functions as intended (both technically and institutionally)
  - Progress Gate: Does the system function as planned?

- Phase 3: Maintain/Operate
  - Focus is on assessing the performance of the deployed system
  - Post-Pilot Operations (CV tech integrated into operational practice)

For More Information
- Visit Program Website for Updates: [http://www.its.dot.gov/pilots](http://www.its.dot.gov/pilots)
- Contact: Kate Hartman, Program Manager, [Kate.hartman@dot.gov](mailto:Kate.hartman@dot.gov)
The Smart City Challenge

• Encourage cities to put forward their best and most creative ideas for innovatively addressing the challenges they are facing.

• Demonstrate how advanced data and intelligent transportation systems (ITS) technologies and applications can be used to reduce congestion, keep travelers safe, protect the environment, respond to climate change, connect underserved communities, and support economic vitality.
SMARTCOLUMBUS

For More Information:
Contact: Kate Hartman
Project Manager
Kate.hartman@dot.gov
ITS JPO Data Program

- Program Goal
  - Advance ability of ITS infrastructure and mobile systems to collect, distribute, and organize data to support multiple applications with safety, mobility, and environmental benefits.

- Program Vision
  - By 2019, State DOTs and MPOs will have access to low cost, scalable, interoperable data management tools that can ingest new data sources and feed new applications in ways that protect the privacy of users while enabling on-demand data sharing at regional and national levels.
  - This toolset will be tested and deployed within at least one region and will support a third party ecosystem of applications and research.
ITS JPO Data Program (cont.)

- Program Focus Areas (FY16 to FY19)
  - Develop Products Supporting Deployment
    - Data streaming tools for state and local agencies
  - Drive Adoption of Products Supporting National Deployment
    - Train and collaborate with early deployers
  - Conduct Stakeholder Engagement and Outreach
    - Include non-traditional stakeholders
  - Enhance Third-Party Access to Connected Vehicle and Traveler Data
    - Demonstrate the value of data sharing
ITS JPO Data Program (cont.)

- **Main Products**
  - **Research Data Exchange (RDE)**
    - A web-based data sharing platform to share multi-modal CV data.
    - [https://www.its-rde.net/](https://www.its-rde.net/)
  - **Operational Data Environment (ODE)**
    - A real-time data environment to receive and distribute real-time data from connected vehicles (CV), personal mobile devices, infrastructure sensors, and other sources. *(under development)*
  - **Privacy Module**
    - An algorithm that enables real-time data sharing while modifying the data to significantly reduce the risk of re-identification. *(under development)*
  - **Data Policy Playbook**
    - A concise online collection of existing policies, principles and real-world examples of successful data management policies and practices. *(under development)*
International Research Exchange

- The USDOT ITS JPO works to foster cooperative international ITS research and to support international harmonization of ITS standards through international research exchange activities.
- Probe Data Related International ITS Working Groups
  - Probe Data Working Group (EU-US-Japan)
  - Deployment Working Group (EU-US)
Probe Data Working Group

- **Co-Chairs**
  - Ariel Gold, USDOT
  - Shinji Itsubo, MLIT
  - Wolfgang Hoefs, EC

- **Recent Accomplishments**
  - Conducted research on the three identified high-priority applications
  - Addressed and refined cross-cutting issues related to probe data such as standards, security, privacy, quality assurance, metadata, storage and access, and data ownership and intellectual property rights (IPR)
  - Identified and prioritized research gaps for future collaboration
  - Final report to be published in late 2016

- **Next Steps**
  - Potential “Phase II” research exchange now being discussed among US, Japan, and European Union
C-ITS Deployment Platform Working Groups
- Cost Benefit Analysis
- Business Case Models
- Open Legal Issues
- Governance & Privacy
- Security & Certification
- Technical Issues
  - Access to Vehicle Resources and Data
  - Decentralized Congestion Control
  - Frequencies Hybrid Communications
- Public Acceptance
- Implementation Issues

V2I Deployment Coalition Working Groups
- Deployment Initiatives
- Deployment Research
- Infrastructure Operator, OEM, and Supplier Partnerships
- Deployment Guidance
- Deployment Standards

* Coalition identified top 16 issues, consistent with Platform working groups
Questions and Contacts

- Presenter
  - Carl Andersen, Office of Research, USDOT, carl.andersen@dot.gov

- Program Contact
  - Safety Pilot Model Deployment
    - Kevin Dopart, ITS JPO, kevin.dopart@dot.gov
  - Connected Vehicle Pilot Deployment
    - Kate Hartman, kate.hartman@dot.gov
  - Smart City Challenge
    - Kate Hartman, kate.hartman@dot.gov
  - ITS JPO Data Program
    - Ariel Gold, ariel.gold@dot.gov