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Intelligent Transportation Systems: Annual U.S. State-of-the-Industry Review
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Presentation Overview

- Introduction
- ITS Strategic Plan
- Connected Vehicle Research
  - NHTSA Decision
  - Safety Pilot
- Infrastructure Deployment
- 2012 Accomplishments
- International Activities
- What’s New
- Stay Connected
Today’s Transportation Challenges

Safety
• 32,367 highway deaths in 2011
• 5.3 million crashes in 2011
• Leading cause of death for ages 4, 11-27

Mobility
• 4.8 billion hours of travel delay
• $101 billion cost of urban congestion

Environment
• 1.9 billion gallons of wasted fuel

ITS Strategic Research Plan 2010-2014

• **Vision:** To research and facilitate a national, *multimodal surface transportation system* that features a connected transportation environment around *vehicles of all types*, the infrastructure, and portable devices to serve the public good by leveraging technology to maximize safety, mobility, and environmental performance.

• Plan developed with full participation by all surface transportation modal administrations, as well as with significant interaction with multimodal stakeholders.

• 2012 Progress Update recently completed.
USDOT Modal Collaboration & Partnership

The ITS JPO works with our modal partners in implementing the strategic vision.

ITS JPO coordinates ITS research with these modal administrations.
Connected Vehicle

• NHTSA Agency Decision
  – 2013 NHTSA agency decision on V2V safety communications systems
  – Similar milestone in 2014 for a decision regarding V2V safety technology on heavy vehicles
  – Information to support the decision will come from many sources, including the Safety Pilot Model Deployment

• Policy Work
  – System security
  – Privacy
  – Governance
  – Business Models
  – Legal Issues
Safety Pilot Model Deployment

- ~2,800 vehicles (cars, buses, and trucks) equipped with V2V devices
- Provide data for determining the technologies’ effectiveness at reducing crashes
- Includes vehicles with integrated safety applications and others that use aftermarket devices (i.e., not built into the vehicle)
- Applications to be tested include:
  - Forward Collision Warning
  - Electronic Emergency Brake Lights
  - Blind Spot Warning/Lane Change Warning
  - Intersection Movement Assist
  - Do Not Pass Warning
  - Left Turn Assist
Infrastructure Deployment Planning

- 2015 FHWA Deployment Guidance
- National Cooperative Highway Research Program (2013 completion)
  - Benefit Cost Analysis for state and local DOTs, including funding options
  - DSRC deployment guidance for state DOTs
- National Connected Vehicle Field Infrastructure Footprint Analysis (AASHTO led, 2014 completion)
- Standardized interfaces
- Certification processes for equipment and systems
- Nationwide Security Credential Management System (SCMS)
- USDOT is working with state and local DOTs and private industry to plan for deployment
Accomplishments & Opportunities

• **Real-Time Data Capture and Management**
  - Launched prototype Research Data Exchange (RDE) providing four well-documented multimodal data sets from San Diego, CA, Portland, OR, Pasadena, CA and Seattle, WA

• **Dynamic Mobility Applications (DMA)**
  - Completed Concept of Operations development for six key application areas: Freeway, Arterial, Transit, Freight, Traveler Information, and Emergency Response Management
  - Held Mobility Workshop in May to engage stakeholders
  - Initiated prototyping effort for Freight
Accomplishments & Opportunities

• Applications for the Environment Real-Time Information Synthesis (AERIS)
  - Developed three application concepts of operations and completed an initial benefit cost analysis

• Road Weather Research
  - Developed the Vehicle Data Translator (VDT) capturing road weather and maintenance fleet data from two State DOTs to improve winter maintenance operations

• Awarded 6 Multistate Corridor Operations and Management grants
Accomplishments & Opportunities

• Vehicle to Infrastructure Communications
  - Developed revised Signal Phase & Timing (SPaT) message set and Roadside Equipment (RSE) for Safety Pilot Model Demonstration

• Safety
  - Developed systems requirements for five potential V2I Safety applications, including:
    - Red light violation warning;
    - Stop sign gap assistance;
    - Curve speed warning;
    - Spot weather impact warning; and
    - Reduced speed/work zone warning.

Driver Vehicle Interface (DVI) Example (static alert message)

Driver Infrastructure Interface (DII) (dynamic signal)
International Activities

• International Standards Harmonization
  - Focused on standards around the vehicle platform

• Collaborative research with European Union
  - 2012 ITS World Congress
  - EU-US Joint Showcase on Connected Vehicle
  - Published a new EU-US report highlighting our joint accomplishments and future plans in areas such as cooperative vehicle harmonization

• Collaborative research with Japan
  - Assess the role of probe data in systems management
  - Complete probe data project and present results at the 2013 ITS World Congress in Tokyo, Japan

• Collaborative research with Canada

• Established new Memorandum of Cooperation with Korean Ministry of Land Transport and Maritime Affairs
What’s New?

- **MAP-21:**
  - Deployment Incentives
    - Deployment planning grants for Integrated Corridor Management (ICM) & Mobility Services for All Americans (MSAA)
  - New Strategic Plan
    - Exploratory Research started in 2012 & 2013
    - Offer your input at: http://itsstrategicplan.ideascale.com/
- Affiliated Test Beds
- Research Data Exchange
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