Moving Forward with New Technologies

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Intelligent Transportation Systems/Joint Program Office
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OVERVIEW

- Overview of the Connected Vehicle Program
  - What is a Connected Vehicle
  - Safety Pilot
  - Mobility Program
  - Policy Issues

- Other Rural focused ITS Activities.

- MAP-21 Summary and Impacts
Today

Safety
- 32,788 highway deaths in 2010
- More than half these deaths in Rural areas
- 6,000,000 crashes/year
- Leading cause of death for ages 4 to 34

Mobility
- 4,200,000,000 hours of travel delay
- $80,000,000,000 cost of urban congestion

Environment
- 2,900,000,000 gallons of wasted fuel
What is a Connected Vehicle?

latitude, longitude, time, heading angle, speed, lateral acceleration, longitudinal acceleration, yaw rate, throttle position, brake status, steering angle, headlight status, wiper status, external temperature, turn signal status, vehicle length, vehicle width, vehicle mass, bumper height
Why It Matters

Up to 80% of non-impaired crash types may be impacted by connected vehicle technology

Source: NHTSA

Based on initial estimates & studies. Actual benefits are not determined at this time.
Key Safety Program Objectives

- 2013 Decision on Vehicle Communications for Safety (light vehicles)
- 2014 Decision on Vehicle Communications for Safety (heavy vehicles)
- 2015 Infrastructure Implementation Guidance
NHTSA Agency Decision Options: 2013

Rulemaking on minimum performance requirements for vehicle communications for safety on new vehicles

Inclusion in NHTSA’s New Car Assessment Program to give car makers credit for voluntary inclusion of safety capability in new vehicles

More research required

Key factor will be the need for, and timing of, a security system

Image: istock.com
Benefits Data: Safety Pilot & Modeling

SAFETY PILOT
Safety Pilot Model Deployment

Ann Arbor, MI

August 21, 2012, 1PM
Connected Vehicle Safety Program
Partners and Contractors

Vehicle Manufacturers

GM
Volvo
Honda
DAIMLER
Daimler Trucks North America
Toyota
Nissan
KIA Motors

USDOT

U.S. Department of Transportation
Research and Innovative Technology Administration

Driving Transportation of the Future

Academia

UMTRI
George Mason University
Montana State University

Public Agencies

Publications

Oak Ridge National Laboratory
VDOT
MCDOT
NYSDOT

Industry

Booz Allen Hamilton
Telcordia

Associations/Standards Developers

ATRI
IEEE
SAE International

SAIC
MERITOR
WABCO

Delphi
ALTERA

Battelle

Industrial Technology Research Institute
Safety Applications

V2V
- Forward Collision Warning (FCW)
- Emergency Electronic Brake Light (EEBL)
- Blind Spot/Lane Change Warning (BSW/LCW)
- Do Not Pass Warning (DNPW)
- Intersection Movement Assist (IMA)
- Left Turn Assist (LTA)

V2I
- Curve Speed Warning (CSW)
- Cooperative Intersection Collision Avoidance System for Violations (CICAS-V)
Safety Pilot Model Deployment

- Major road test and real world implementation involving:
  - Approximately 3000 vehicles
  - Multiple vehicle & device types
  - Roadside infrastructure

- Also to test
  - Prototype security mechanisms
  - Device certification processes
Safety Pilot Model Deployment

2,564

169 = 2,836

103
Connected Vehicles are an Enabler
Mobility Program

Real-time Data Capture and Management

Mobility Applications

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

Data Environment

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

- **USDOT Authority**
  - USDOT has sufficient *current legal authority* to regulate or support implementation of many critical aspects of a connected vehicle environment, including:
    - Equipment in new vehicles
    - Aftermarket devices
    - Security system
  - USDOT does *not* have legal authority to require States to install infrastructure
- **Privacy**
- **Business Models**
  - Private
  - Public/private
- **Fully public** - *unlikely* given current funding constraints and trends toward more private sector transportation funding
Policy Issues

Policy Opportunities & Challenges

- Privacy/Cyber security
- Governance
- Funding/Sustainability
- Data ownership
- Interoperability
- Risk/Liability
- Implementation

Successful Together

Stakeholders

- Public/consumers
- Automakers
- Equip. Suppliers
- Public agencies
- Business/Industry
- Interest groups
- Innovators
- Academia
- ..and many more!

Image: istock.com
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Other Rural Focused ITS Activities

- **Multistate Corridor Operations and Management Awards**

<table>
<thead>
<tr>
<th>Project</th>
<th>Description</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Northern Corridor (MT, ID, MN, ND)</td>
<td>Multistate Planning and Development Study</td>
<td>$300K</td>
</tr>
<tr>
<td>Wisconsin DOT (IL, IN, MN, WI, Ontario, CN)</td>
<td>Work Zone and Traveler Information across Corridor using an innovative, regional planning process</td>
<td>$900K</td>
</tr>
<tr>
<td>North/West Passage Corridor Coalition (WA, ID, MT, WY, ND, SD, MN)</td>
<td>Rural emphasis on multi-corridor traveler information</td>
<td>$800K</td>
</tr>
<tr>
<td>West Coast Corridor Clean, Green and Smart Corridor Development (AL, WA, OR, CA)</td>
<td>Alternative Fuel study across a corridor</td>
<td>$400K</td>
</tr>
<tr>
<td>I-15 Mobility Alliance (NV, UT, CA)</td>
<td>Multi-modal real time travel dissemination using GPS and focused on rural setting</td>
<td>$1.5M</td>
</tr>
</tbody>
</table>
Other Rural Focused ITS Activities

• **Smart Roadside**
  • Involves:
    • Universal Identifier
    • Wireless Roadside Inspection
    • Truck Parking
    • Virtual Weigh Station
  • Con Ops developed, going into prototype testing

• **Truck Parking** - SAFETEA-LU Section 1305 Truck Parking Facilities Program. Over $33M awarded, in 5 projects, to parking space construction projects in and large scale ITS based systems (California, I-95 from Connecticut to North Carolina, Michigan, Minnesota, and Wisconsin).

• **Upcoming Rural ITS Gap Analysis Study**
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MAP 21 – Summary

A brief overview of ITS - related impacts of MAP - 21, Division E, TITLE III

Key Data Points defining MAP-21:

- Signed into law - July 6, 2012
- Duration - 27 months
- Effective dates October 1, 2012 - September 30, 2014
- Until then: FY12 Extension of SAFETEA-LU July 1 - September 30, 2012
  - 3 additional months of funding for existing programs ($13 Billion)
- MAP-21 extends the Highway Trust Fund and Fuel Tax collection authority through September 30, 2016
- Two fiscal years of funding: $105 B for FY 13 and FY 14; combined with $13 Billion = Total $118 Billion
- ITS Program Contract Authority: $100 Million (obligation limitation applies)
MAP-21 Title III Impacts on ITS

USE OF FUNDS FOR ITS ACTIVITIES

Deployment strategy emphasizes adoption of ITS technologies that will improve performance of National Highway System in areas such as:

- Traffic Operations
- Incident Management
- Traffic Flow Information
- Emergency Response
- Surface Transportation Network Management
- Congestion Management

by accelerating adoption of innovative technologies thru use of:

(A) demonstration programs
(B) grant funding
(C) incentives to eligible entities
(D) other tools/strategies or methods that will result in the deployment of innovative ITS technologies
MAP-21 Title III Impacts on ITS

OUTREACH FUNDING
- MAP-21 does not address Outreach funding.
  - IMPACT: Previous limit on Outreach funding removed

PROGRAM REPORTING
- MAP-21, Title III specifies one comprehensive and detailed plan during 27 month effective period of legislation that addresses the manner in which incentives may be adopted, as appropriate, through existing deployment activities carried out by surface transportation modal administrations
  - IMPACT: Report review may take a year; time compression is a challenge.

PURPOSES
- MAP-21, TITLE III adds Purpose statement: program execution must ensure a systems approach that includes cooperation among vehicles, infrastructure and users
  - IMPACT: Use of systems approach that pulls together vehicles, infrastructure and users is mandated
MAP-21 Title III Impacts on ITS

ITS PROGRAM ADVISORY COMMITTEE:

- MAP-21, Title III **adds a requirement for member qualifications**: (L) “members with expertise in planning, safety, telecommunications, utilities, and operations”
  - IMPACT: Review ITS Program Advisory Committee member qualifications

- Requirements remaining in effect:
  - Annual **ITS Program Advisory Committee Report to Congress**
    - IMPACT: February 1, 2013 is first due date for report
  - **Special Rule** (Exemption from Paperwork Reduction Act for reporting of test, deployment, or program assessment activities i.e., evaluation-related surveys, etc) remains in effect
    - IMPACT: No change
MAP-21, Title III Impacts on ITS

RESEARCH AND DEVELOPMENT

- **Federal Share** payable on account of projects and activities carried out under MAP-21, TITLE III shall not exceed 80% remains unchanged
  - IMPACT: None

NATIONAL ARCHITECTURE AND STANDARDS

- MAP-21, Title III does not address architecture implementation but specifies: the Secretary shall **develop and maintain** a national ITS architecture and supporting ITS standards and protocols **to promote the use of systems engineering methods** in the widespread deployment and evaluation of intelligent transportation systems...
  - IMPACT: Project planners and management teams must consider systems engineering approaches in ITS project management
MAP-21, Title III Impacts on ITS

USE OF STANDARDS DEVELOPMENT ORGANIZATIONS

- New SDO membership requirement: to ensure that SDO memberships are comprised of, and represent, the surface transportation and intelligent transportation systems industries
  - IMPACT: SDO membership review needed to ensure compliance

STANDARDS FOR NATIONAL POLICY IMPLEMENTATION

- New section provides Secretary legal authority for establishing a new class of standards: If necessary for implementation of a nationwide policy relating to user fee collection or other capability requiring nationwide uniformity, the Secretary may establish and require the use of that standard
  - IMPACT: Department gains flexibility in imposing standards relating to collection of user fees

Expert Panel:

- Expert panel requirement removed.
MAP-21, Title III Impacts on ITS

SECRETARIAL DISCRETION

MAP-21, Title III:

- Preserves the Secretary’s discretion in granting an exemption from conformity requirements for projects designed to achieve specific research objectives outlined in the national intelligent transportation system program plan or the surface transportation research and development strategic plan…

- **But** removes the Secretary’s discretion in authorizing exceptions for: The upgrade or expansion of an intelligent transportation system in existence on the date of enactment of SAFETEA-LU…
  - **IMPACT:** None

NEW REPORT REQUIREMENT ON V2V & V2I DEPLOYMENT

- Within three years (July 2015) program must submit report to House and Senate
  - Assess the status of DSRC
  - Analyzes gaps in technology and applications
  - Defines recommended implementation approach for DSRC

- Report must be reviewed by National Research Council + independent third party
  - **IMPACT:** Report review may take a year; time compression is a challenge
FOR MORE INFORMATION

www.its.dot.gov

Imagine that...
...a car a mile ahead of you on the highway sends an alert to your vehicle, warning you of upcoming slippery conditions that are causing drivers to slam on their brakes.

U.S. DOT will host Free Public Meeting and Webinar for the Integrated Dynamic Transit Operations (IDTO) The IDTO public meeting will bring stakeholders together as part of an interactive forum. Read more...

Spotlight
- ITS Architecture Made Easier Using Turbo Architecture: An Overview of NHTS's New Web-based Turbo Architecture Course 1/10/12
- U.S. DOT Announces Public Meeting for Two Connected Vehicle Concepts for Traffic Management 1/9/12
- Letter from the Director Congratulating ITS JPO Staff Award Winners 12/23/11
More News>>

Our Current Research

Applications  Mode-Specific  Cross-Cutting
- Vehicle-to-Vehicle Safety
- Vehicle-to-Infrastructure Safety
- Real Time Data Capture
- Dynamic Mobility Applications
- Environment
- Road Weather
More >>

Procurement Opportunities
As we implement the ITS Research Strategic Plan, open procurements may become available through a variety of solicitations. More >>

Public Meetings

SAFETY PILOT
More>>

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