New York Commercial Vehicle Infrastructure Integration (CVII)

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ITSA Annual Meeting
SS36: Future of Truck Inspections
June 2, 2009
CVII Program

- I-95 Corridor Coalition funded program
- Complete interoperability! Communicate with any VII compliant vehicle or infrastructure
- Non-proprietary core system design capable of duplication
- Integrate VII communications device w/SAE J1708 commercial vehicle data bus
- Compliant/utilize the standard message sets SAE J1587, SAE J1939 and SAE J2735
CVII Program

Existing CVII Contract:

- Develop/Test CV VII compliant OBE system including Human Vehicle Interface for basic communication of general transportation related information (I2V)
- Develop/Test CVII DSRC Applications:
  - CV Driver I.D & Verification (V2I)
  - Test Wireless Vehicle Safety Inspection Information (V2I)
  - CV to Maintenance Vehicle Communication (V2V)
CVII Program

Future Actions (near term)

- Heavy vehicle to light vehicle communication
  - Priority safety applications

Future Actions (longer term)

- Partner with Large Carriers for long term field tests/pilot program
- Additional RSE deployments
- Additional applications: truck parking, overturn warning, tolling, restricted routing/geo fencing
- Additional communication pathways (non-DSRC)
CVII Program

Vehicle to Roadside Generic Communications

- Vehicle sends standard anonymous probe data (i.e. current SAE J2735 probe message) to a back-end application
- Vehicle sends truck related anonymous probe data (i.e. current SAE J2735 probe message, enhanced for truck CAN data elements) to a back-end application
- Back end application displays probe data on a GIS map

Preliminary
CVII Program

Roadside to Vehicle Generic Communications

- Back-end application sends network-based static roadside signage information (height restrictions, weight restrictions, curve speed warnings, etc) to the vehicle.

- Back-end application sends network-based dynamic travel information (truck travel times, truck parking availability, border crossing wait times, etc) to the vehicle.

- Roadside application sends localized time sensitive dynamic travel information (workzones, OS/OW temporary restrictions, geofencing warnings, etc) to the vehicle.

- Vehicle receives and displays all the information, following HVI guidelines.
CVII Program

Wireless Driver Identification and Verification (Parked Truck Scenario)

- Driver inputs identification information and driver’s identification sent to a roadside application
- Roadside application validates driver’s identification and CDL while the vehicle is still in range of the RSE
- Roadside application sends a message to the driver indicating that his/her CDL is inactive, revoked, or suspended
- Vehicle receives and displays the message to the driver
- Driver is unable to start the commercial vehicle, if the driver’s CDL is inactive, revoked, or suspended
CVII Program

Wireless Vehicle Safety Inspection (Moving Truck Scenario)

- Vehicle sends Safety Data Message Set (SDMS) to a back-end application
- Back-end application validates SDMS data against a combination of real and/or mock safety databases for driver, vehicle and carrier data
- Back-end application sends a message to the driver indicating that there is a driver, vehicle and/or carrier safety violation
- Vehicle receives and displays the message to the driver
CVII Program
Potential Vehicle Safety Information

SDMS information may be sent to:
- State commercial vehicle safety systems
- FMCSA commercial vehicle safety systems
- Statewide operations/law enforcement dispatch center
- Associated inspection station
- Motor carrier/motor coach company

SDMS information may be accessed by authorized:
- Roadside enforcement and compliance staff
- Motor carrier/motor coach company
- Driver
- Safety analysts

Evaluation of SDMS information may result in:
- Updated company safety rating
- Updated driver safety status
- Warning or citation
- Roadside interception
- Standard inspection
- Automated compliance assessment

Safety Data Message Set (SDMS)

Identifiers (** from a data bus message)
- Driver license jurisdiction, ID **
- Vehicle identification number (VIN) **
- Motor carrier/coach USDOT number
- Shipping document ID

Vehicle Data (red/green status unless marked with * signifying data)
- Brakes
- Engine
- Steering
- Trailer
- Weight
- Cargo
- Fuel system
- Suspension
- Transmission
- Electrical
- Lighting
- *Tires
- *Vehicle position
- Other comp

Electronic On-Board Recorder (EOBR) Data
- Duty Status
- Location of Duty Status Change

Roadside VII Equipment

Vehicle Data: SAEJ1708/SAEJ1587, SAEJ1939
CVII Program

Maintenance Vehicle to Commercial Vehicle Communications

- A moving maintenance vehicle (snow plow) broadcasts a heartbeat-like message with its vehicle type, position and heading.

- A commercial vehicle (truck) following the snow plow receives and displays a warning to the driver about the snow plow ahead.
**Concept of VII W/CVII!**

- **OBE** – On Board Equipment
- **RSE** – Road Side Equipment

- **DSRC @ 5.9 GHZ**

**Network/System Management Center**

**Public Sector**

- OEMs, Private Companies, Subscription Services, Fleet Management, etc.

**Private Sector**

- **Green** = NYS CVII
- **Red** = Others/TBD

Preliminary
NYSDOT INFORM VII Test Bed
VII Road-Side Equipment
Spring Valley Corridor Sites

Legend
- CCTV
- Transmit
- VMS

- Ramapo Srvc Area / MP 33.2 SB
- Transmit MP 26.0 SB
- CCTV MP 30.9 SB
- CCTV MP 27.6 SB
- CCTV MP 23.5 SB
- Spring Valley ORT MP 24.3 NB
- Transmit MP 22.3 NB
- Transmit MP 21.2 SB
- Transmit MP 19.0 NB
- CCTV MP 17.6 NB
- CCTV MP 20.7 SB
- Transmit MP 16.3 SB

Miles

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I-84/I-87 Commercial Vehicle Smart Roadside/VII E-Screening Network

Proposed NYSDOT E-Screening Location w/WIM/VII/Smart Roadside

Proposed NYSBA E-Screening Location w/WIM/VII/Smart Roadside

Proposed NYSDOT E-Screening Location w/WIM/VII/Smart Roadside

Proposed NYSTA VII/Smart Roadside/Expanded CVISN Corridor
(14 sites in approx. 13 miles)
Potential Expanded NYS CVII & E-Screening Corridors

[Map showing potential corridors for CVII funding and screening.]
VII/CVII Can Enable a Wide Range of Applications!

**Safety & Security Examples**
- CV Driver ID/Verification
- CV Safety Data/Wireless Inspection
- Road Condition Warning
- In-Vehicle Signing
- CV Routing/Geo Fencing
- Truck Parking
- CV Overturn Warning/Control
- Lane/Road Departure
- Intersection Collision Avoidance
- Cargo/Container Tracking

**Mobility Examples**
- Tolling
- Traffic Probe Data
- Travel Time
- Incident/Accident Info.
- Electronic Payment
- Navigation/Directions
Thank You!

??? Questions ???

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