2014 Road Weather Management Stakeholder Meeting

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Salt Lake City, Utah

VII Consortium
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VII Consortium (VIIC)

Industry consortium (Michigan 501 (c) (06) non-profit) consisting of ten light-duty vehicle manufacturers
VIIC Focus within the Connected Vehicle Initiative

The Connected Vehicle initiative encompasses a wide range of evolving technologies developed by many government, industry, and academic partners. The VIIC is primarily focused on deployment of cooperative safety, mobility and weather applications based on 5.9 GHz DSRC.
Sustainable Transportation

The Connected Vehicle communication system can become a cornerstone for future transportation sustainability. It is more than a safety system or an environmental technology, it is a suite of V2V and V2I applications that:

- Provide enhanced active safety
- Leverage existing infrastructure for greater mobility and productivity
- Improved fuel economy and reduce greenhouse gases
General DSRC Requirements

Required for Deployment:
Different Manufacturers

- Communicating on the Same Frequency
  → *Where do we go to talk*

- Using the Same Language
  → *We understand each other*
  → *Data in messages meets same minimum requirements*

- With Security
  → *We trust what we say to each other*

- Managing Channel Loading
  → *We vary message frequency and power together*

**Same Frequency:** 5.9 GHz DSRC (IEEE 1609.4)

**Security** (IEEE 1609.2)

**Same Language** (IEEE 802.11)

**WAVE Short Message** (IEEE 1609.3)

**Basic Safety Message** (SAE J2735)

- Basic Vehicle State
  (Veh. ID, Seq. #, time, position, motion, control, veh. size)
  *Mandatory in Basic Safety message*

- Vehicle Safety Extension
  - Event Flags
  - Path History
  - Path Prediction
  - RTCM Corrections

  *Required for V-V safety applications*

- Other optional safety-related data
Mobility: $78 Billion Cost of Urban Congestion

USDOT data shows traffic congestion is a $78 billion annual drain on the U.S. economy...
- 4.2 billion lost hours
- 2.9 billion gallons of wasted fuel = 58 fully loaded supertankers.

- Preventing crashes reduces the most common source of congestion
- Basic safety message monitoring by infrastructure allows optimization of traffic flow
- DSRC driver information minimizes local impact of traffic disruptions
- Vehicle communication with local infrastructure enables more effective traffic management algorithms to be implemented – more throughput from existing roadways
Mobility Program

Real-time Data Capture and Management

Dynamic Mobility Applications

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

Data Environment

- 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
Another Key Area for AASHTO-VIIC Coordination - Security

- Autonomous vehicle safety applications depend upon sensor data from within the same vehicle
- Cooperative safety and mobility applications depend upon data from other vehicles and from the infrastructure
- This data must be trusted in order for a cooperative system to work

Messages from other Vehicles and the Infrastructure must be trusted
Key Enabler - Privacy

- Drivers must also find the system acceptable

- It must be possible for people to travel in their private vehicles without being tracked, therefore mandatory services must be rendered anonymously

- Opt-in services that collect personally-identifiable information must adhere to use limits and fair information practices
The full potential benefits of road vehicle automation may be enhanced through a connected environment.
Final Thoughts

Need to Collaborate on a Focused Suite of Applications that Motivate Stakeholders to Take Action for a Successful Deployment.