AASHTO Updates on Connected and Automated Vehicle Programs

June 21, 2016
I-95 CC CAV Summit
AASHTO CV AV Programs

1. V2I Deployment Coalition (V2IDC)
   - Phase 2 Priority Focus Areas

2. CAV Executive Leadership Team (CAV ELT)
   - Priority Focus Areas

3. AASHTO STSMO CAV TWG
Evolution of V2I DC

V2I-DC Executive Committee
USDOT (FHWA, OSTP – ITS JPO, NHTSA, FTA, etc.) & core stakeholders

V2I-DC Chair
(Open Discussion – possible chair from AASHTO subcommittee or core group membership)

Vehicle-to-Infrastructure Deployment Coalition will be Supported by the Technical Teams drawn from the Following Groups

USDOT
FHWA, FTA, ITS - JPO, NHTSA, ETC.

Transportation System Owners/Operators
State and local DOTs, transit system agencies, toll facility organizations, etc.

Owner/Operator Associations
AASHTO, ITE, ITSA, APTA, IBTA, TRB, AAMVA, American Association of Port Authorities, etc.

Trade Associations
Cellular Telecommunications Industry Association (CTIA), CVTA, OmniAir, Intelligent Car Coalition, etc.

Other
OEMs, Cooperative Transportation Systems Pooled Fund Study, HOV HOT PFS, etc.

Connected Vehicle Deployment Coalition key functions

1. Collaborate with FHWA on 2015 connected vehicle deployment guidance
2. Promote streamlining among USDOT, owner/operator associations, AASTHO, and trade & professional associations
3. Support the development of second phase Connected Vehicle Footprint Analysis
4. V2I-DC Chair will also serve on the CV ELT and provide overall technical support to the Connected Vehicle Executive Leadership Team
5. The Vehicle-to-Infrastructure Deployment Coalition Chair and Connected Vehicle Executive Leadership Team Chair to provide executive input to other Federal, State, and local transportation groups associated with V2I technology deployment.
V2I DC Structure

CAV ELT

V2IDC Executive Committee

TWG 1: Initiatives
TWG 2: Research
TWG 3: Partners
TWG 4: Guidance
TWG 5: Standards

USDOT - ITS JPO
- FHWA
- FTA
- NHTSA
V2I DC Applications Focus (as set by the Executive Committee)

- To help accelerate deployment of V2I applications related to:
  - Intersections (signalized & non-signalized)
  - End of queue warnings
  - Work zone management
  - Curve warning systems
V2I DC Efforts

TWGs approach to the 4 Focus Areas:

• Addressing 16 key issues impacting V2I deployment

• Each TWG has a Work Plan of activities

• ‘Fishbone Diagrams’ will help coordinate activities of TWGs

• Monthly TWG webinars

• Coalition wide meetings/calls

Four Focus Areas
1. Intersections
2. Queue Warnings
3. Work Zone Management
4. Curve Warnings
# Deployment Issues

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Some issues have been addressed by multiple TWGs.
Issue Coordination

- Example: Coordination among multiple TWGs on Issue 1

**Issue #1 V2X Applications**

There is a need for Prioritization of V2X Applications (including multi-modal applications) and a common understanding of how OEM and infrastructure applications work together.

**Target Outcomes**

1. Synopsis of the survey results, describing the V2I applications that owners and operators feel would be most beneficial and/or they are planning/proposing to deploy.
2. Summary of the standards needs and gaps identified by TWG 5 that relate to the applications believed to be most beneficial based on the survey.
3. Definition of any additional research proposed to further explore Issue #1.
4. Outreach sharing survey results conducted to the V2IDC and the Connected Vehicle stakeholders outside the coalition.
V2I DC Phase 2 Focus Areas

1. Increased OEM Interaction (e.g. data needs of OEMs & Owners/Operators
2. Guidance Document – In between Guidance document releases, how can we develop interim information to support end user needs?
3. Encouraging SPaT Deployments Nationwide
4. V2I Security Activities – Define V2I Approach
5. Roadmap for 4 Focus Areas (Map CVRIA & FHWA V2I Applications to focus areas & prioritize them)
6. V2I Outreach - needs priority & direction, consistent terminology
7. Mining data from completed/underway projects/proposals
V2I DC Business Plan

• Focus for V2I DC from 2016-2021
  ▪ Track and support resolution of initial 16 issues
  ▪ Initiate a process to address Issue 5: Security
  ▪ Identify and define additional issues
  ▪ Facilitate peer to peer / best practice exchanges
  ▪ Help ‘early adopters’ plan for deployments
  ▪ Help identify funding sources to assist V2I deployments
  ▪ Feedback to pilot sites
  ▪ Feedback to CAMP and VIIC
  ▪ Alignment and support of training / education
  ▪ Support activities of CAV ELT
  ▪ Seek ongoing funding sources for V2I DC to continue operations
CAV Executive Leadership Team (CAV-ELT)
## Updated CAV ELT Roster Today

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<tr>
<th>Entity</th>
<th># of Members</th>
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<tbody>
<tr>
<td>USDOT</td>
<td>7 Liaisons</td>
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<tr>
<td>State DOTs</td>
<td>15 members</td>
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<tr>
<td>Local Governments</td>
<td>5 members</td>
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<tr>
<td>AASHTO</td>
<td>3 members</td>
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<tr>
<td>ITE / ITS America</td>
<td>1 member each</td>
</tr>
<tr>
<td>Automotive Industry</td>
<td>15 – 20 members</td>
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<tr>
<td>TRB</td>
<td>1 member</td>
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<tr>
<td>NACO / NACTO / IBTTA / VII / AAMVA/ Others</td>
<td>9 members</td>
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CAV ELT Purpose & Context

- CAV ELT met in Detroit (April, 2016)
- Discussed & Agreed overall purpose:
  - To discuss and develop policies that accelerate deployment of AV, in convergence with CV
  - Be proactive and be the voice of our ultimate customers – the roadway user!
April 22<sup>nd</sup> Detroit CAV ELT Focus Areas

1. **Policy Initiatives are essential**
   - Collaborative effort of federal, state, local, academia, and associations

2. **Standards/guidelines for AV (AASHTO)**
   - Roles & Responsibilities of states, Federal, county, locals
   - Seamless guidelines applicable nationwide

3. **Taking a Long Term View for Transp. Community**
   - Use Cases & scenario planning
   - “What if” scenarios – How safe is safe enough?

4. **Biggest Risks Identified in CAV are Spectrum & Security/Privacy & GPS**

5. Planning Assumptions & Tools for Agencies

6. Readiness Timing & Ramifications (policy & institutional)

7. Workforce to Support Deployments

8. Data (who has access)

9. Comprehensive Outreach & Education of Constituencies

10. Focusing on long term research implications

11. A Study of the Ramifications of Increased Risks Associated with AV for State Agencies

12. Federal Actions over State Actions

13. A Study of the feasibility of multi-state truck platooning

14. Information needed from the states vs. Info needed from OEMs for Readiness

15. Address the Impacts of Freight, Parking, Urban Land Use & other transformational technologies related to AV

16. A study of the feasibility of need and timing of roadside units information systems

17. Policies related to interoperability issues

18. Signing and striping readiness

19. Roadside and Intersection communication units common development platform

20. Geometric readiness based on deployment scale and readiness
CAV ELT Priority Focus Areas

1. Need for Leadership in the Development of National Guidelines for the introduction of AV

2. Early-stage risks to CAV deployment:
   - 5.9GHz spectrum protection &
   - Security and privacy of networked technologies

3. The interoperability of CV and AV throughout the country, crossing borders and in cities and regions

4. Information exchange between Industry and Government

5. Policies for CV and AV data access provisions

6. Comprehensive public outreach and education for CAV (travelers, elected officials, public and private entities)

7. Agencies need a common set of planning assumptions, scenarios, and tools for long term planning for CAV.
Next steps for CAV-ELT

- Wide sharing of the ELT’s purpose and objectives
- ELT assessment of the key policy issues for CAV deployment
  - Issues to be addressed directly by the ELT
  - Issues for partnership with other entities
- Preparation of a white paper on CAV policy issues, including the convergence of CV and AV
- Development of guidance concerning State DOT readiness for AV deployment
NOCoE Website & V2I Site
2015 STSMO Leadership Team

STSMO
Shailen Bhatt - Chair
John Nisbet WSDOT – Vice Chair
Jeff Lindley- FHWA – Secretary
Gummada Murthy, AASHTO – Liaison
Patrick Zelinski, AASHTO - Liaison

TWG 1
Systems Operation Strategies
J. Nisbet, WA / B. Freeze, TN

TWG 2
Systems Operations Performance Measures
D. Bremmer, WA / T. Kratofil, MI

TWG 3
TSM&O Research
G. McGill, OR / S. Marler, IA

TWG 4
TIMTAG
T. Lane, AZ / D. Gustafson, VA

TWG 5
Connected Vehicles
Blaine Leonard, UT / Greg Larson, CA / Matt Smith, MI

FHWA Liaisons
Robert Arnold / Rich Taylor / Tracy Scriba / Paul Jodoin

Robert Arnold / Jonathan Walker
For Additional Questions

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