AASHTO Connected & Automated Vehicle Focus Area

April 18, 2017 Webinar
Agenda

1. Role Call
2. SPaT Challenge Overview and Update
3. Autonomous Vehicle Policy Updates
4. Feedback/Input/Questions
5. Research Topics
SPaT Challenge Overview & Update
Blaine Leonard, Utah DOT
Origin of the SPaT Challenge

“Chicken and Egg” problem:
How do we encourage / initiate broad V2I deployment?

How do we demonstrate commitment to the OEM and private industry?

What is a reasonable, early expectation?

Signalized Intersections (low-hanging fruit)
SPaT Challenge

Challenge state and local public sector transportation Infrastructure Owners & Operators (IOOs) to deploy DSRC infrastructure with SPaT (and MAP) broadcasts in at least one coordinated corridor or network (approximately 20 signalized intersections) in each state by January 2020.

Additional V2I Applications that build on SPaT are also encouraged!

20 Intersections in 50 states by 2020!
SPaT Resources Team
Lead: Ray Starr (MnDOT)
Working to develop SPaT Resources. Originally formed by members of TWG 1, membership has grown to include others.

SPaT Tactical Working Group
Lead: Blaine Leonard
Discussing the SPaT rollout, and developing strategies for educating state and local Infrastructure Owners & Operators (IOOs) about the SPaT Challenge.

SPaT Executive Working Group
Lead: Mike Holder
Performing outreach and education to executives at state and local IOOs and OEMs.

Outreach by Outside Organizations
Outreach to share common SPaT Challenge messages and support materials is anticipated by: AASHTO, ITE, ITS America, NACE, APWA, & Others.

V2I DC Executive Committee

V2I DC

TWGs will continue to receive briefings on, and provide input towards SPaT Challenge resources.

Outreach by Outside Organizations
SPaT Challenge Website

www.transportationops.org/spatchallenge
### Who is Pursuing SPaT Challenge?

<table>
<thead>
<tr>
<th>SPaT Involvement</th>
<th>#</th>
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<tbody>
<tr>
<td>Agencies with active DSRC SPaT Broadcasts</td>
<td>4</td>
</tr>
<tr>
<td>Agencies that have identified they are pursuing the SPaT Challenge</td>
<td>9</td>
</tr>
<tr>
<td>- Either on the SPaT Challenge website map or in the process of being added</td>
<td></td>
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<tr>
<td>Agencies we have informally heard are starting the process of organizing for the</td>
<td>4</td>
</tr>
<tr>
<td>- Yet to be verified and added to the SPaT Challenge map</td>
<td></td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>17</strong></td>
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SPaT Challenge Website

Resources are being posted as they are finished

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RESOURCES

The following resources have been compiled or created by members of the V2I Deployment Coalition and are available or will soon be available.

- Resource #1: DSRC licensing information
- Resource #2: Implementation guidance
- Resource #3: Estimated costs (install & maintenance) - Coming Soon
- Resource #4: Sample SPaT documentation - Coming Soon
- Resource #5: Guidelines for selecting corridors
- Resource #6: Procurement Guidance - Coming Soon
- Resource #7: Identifying existing funding sources to consider - Coming Soon
- Resource #8: Frequently Asked Questions (FAQs)
- Webinar Schedule and Recordings – Coming Soon
- Additional Links
# SPaT Challenge Resources

<table>
<thead>
<tr>
<th>SPaT Challenge Resource</th>
<th>Status</th>
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<tbody>
<tr>
<td>DSRC Licensing Information</td>
<td>On-line / Available</td>
</tr>
<tr>
<td>Guidelines for Selecting Corridors</td>
<td>On-line / Available</td>
</tr>
<tr>
<td>Implementation Guidance</td>
<td>On-line / Available</td>
</tr>
<tr>
<td>SPaT Challenge Folio</td>
<td>On-line / Available</td>
</tr>
<tr>
<td>SPaT Challenge FAQs</td>
<td>On-line / Available</td>
</tr>
<tr>
<td>SPaT Challenge Estimated Costs</td>
<td>Draft Being Reviewed</td>
</tr>
<tr>
<td>SCMS &amp; The SPaT Challenge</td>
<td>Draft Being Reviewed</td>
</tr>
<tr>
<td>Standards Versioning Management</td>
<td>Draft Being Reviewed</td>
</tr>
<tr>
<td>Simple Steps to Deployment – Resource Guide</td>
<td>Draft Being Reviewed</td>
</tr>
<tr>
<td>Specifications &amp; Requirements</td>
<td>In Development</td>
</tr>
<tr>
<td>Procurement Guidance</td>
<td>In Development</td>
</tr>
</tbody>
</table>
SPaT Challenge
Tactical Working Group

• SPaT Challenge Communications Plan
  - In draft form, finalize in coming months
• “Announcement” documents
  - Technical & Executive versions drafted
• Planning Coordinated Outreach through:
  - AASHTO
  - ITE
  - ITS America
The SPaT Challenge – Getting Started

- Select a Corridor / Area
  - Infrastructure Compatibility
    - Signal Controllers
    - Backhaul
  - Future V2I Applications
    - Red Light Violation Warning
    - Intelligent Signal Systems
    - Eco-Driver
- Get on the NOCOE SPaT Challenge Map

Guidelines for Selecting Corridors
The SPaT Challenge – Getting Started

• Define Operations / Requirements
  ▪ Identify Partners and Stakeholders
    ❖ Other Jurisdictions
    ❖ Deployment Partners
  ▪ Understand Hardware and Architecture
    ❖ DSRC Roadside Units (RSU)
    ❖ Messages Being Sent – SPaT and MAP
    ❖ Performance Requirements
The SPaT Challenge – Getting Started
The SPaT Challenge – Getting Started

• Design / Procure
  ▪ Identify Hardware Needed
    ❖ DSRC / Cabling / Mounting
    ❖ Budgeting
  ▪ Procurement
  ▪ DSRC Licensing
  ▪ Create MAP Data

Pending . . .

- Hardware Specifications
- Message Specifications
- Procurement Guidance
- Estimated Costs
- Licensing Process
The SPaT Challenge – Getting Started

- Installation / Integration
- Testing and Verification
- Operate and Maintain

- Consider Next Steps ...
The SPaT Challenge – Questions?

The National Connected Vehicle Deployment Challenge
20 SPaT Intersections in 50 States by 2020

The Challenge:
To challenge state and local public sector transportation infrastructure owners and operators to cooperate together to achieve deployment of DSRC infrastructure with SPaT broadcasts in at least one corridor or network (approximately 20 signalized intersections) in each of the 50 states by January 2020.
Autonomous Vehicle Policy Updates
AV Legislative / Policy

• Resources:
  ▪ National Conference of State Legislatures (NCSL) – tracking of legislation
    ❖ In 2017, 32 states have introduced legislation
    ❖ In 2016, 20 states introduced legislation
    ❖ In 2015, 16 states introduced legislation
    ❖ 12 states have passed legislation related to autonomous vehicles
    ❖ Governors in Arizona and Massachusetts issued executive orders related to autonomous vehicles
NCSL Website

AUTONOMOUS VEHICLES | SELF-DRIVING VEHICLES ENACTED LEGISLATION

4/12/2017

Autonomous Vehicles

Many people consider autonomous vehicles to be a significant part of the future of the automotive industry.

As the technology for autonomous vehicles continues to develop, it may be necessary for state and municipal governments to address the potential impacts of these vehicles on the road.

Each year, the number of states considering legislation related to autonomous vehicles has gradually increased.

Map tracking AV legislation

Links to enacted AV legislation
AV Legislative / Policy

• Other Resources:
  ▪ NHTSA “Federal Automated Vehicle Policy: Accelerating the Next Generation in Roadway Safety” (September 2016)
  ▪ NHTSA “Preliminary Statement of Policy Concerning Automated Vehicles” (2013)
California AV Policy Update
Greg Larson, Caltrans
Automated Vehicle Regulations in California
As soon as practicable, but no later than January 1, 2015, DMV must adopt regulations setting forth requirements for:

- Manufacturers’ testing of automated vehicles on public roadways
- Operation (deployment) of automated vehicles on public roadways
California’s Definition of an Automated Vehicle

A vehicle, equipped with automated technology, that has the capability to drive **without the active physical control or monitoring by a human operator** (not driver assistance!)

![Automated Vehicles](image1.png) ![Automated Vehicles](image2.png)
Responsible Agencies

- Statewide Steering Committee:
Regulations Package 1 – Testing

- Two pre-notice workshops
- 45-day public comment period
- Formal public hearing
- 15-day public comment period
- Regulations approved and adopted in May 2014
- Became effective on September 16, 2014
Testing on California Public Roadways

- $5 million in insurance, bond, or self-insurance
- Manufacturer has tested vehicle under controlled conditions and reasonably determined it is safe to operate the vehicles on public roads under those conditions
- Test driver must be seated in driver seat during testing, ready to regain control
- Test driver requirements:
  - No DUI, not an at-fault driver, and no more than 1 point on license
  - Successful completion of test driver training program
  - Must be an employee, contractor, or designee of manufacturer
- Report any accident within 10 days
- Report unanticipated disengagements of automated technology annually
- Testing permit valid for one year
- Vehicles > 10,000 lbs GVW and motorcycles excluded from testing
Current Testing Permit Holders (30)

- Valeo North America
- Next EV
- Wheego Electric Cars
- Telenav, Inc
- NVIDIA Corporation
- AutoX Technologies Inc
- Subaru
- Udacity, Inc.
- Navya, Inc.
- Renovo Motors, Inc
- UATC, LLC (Uber)
- PlusAI, Inc.
- Nuro, Inc.
- CarOne, LLC
- Apple, Inc.
Regulations Package 2 - Deployment

- Theme: “Necessary to ensure the safe operation” on public roads
- Pre-notice workshops conducted in March 2014 and January 2015
- “Request for Interest” for any third-party entities with an interest/capability in conducting functional safety reviews of autonomous vehicles
- Draft deployment regulations released in December 2015
- Two more public workshops
  - January 28, 2016 in Sacramento
  - February 2, 2016 in Los Angeles
- Put on hold pending release of NHTSA Policy Statement
AV Deployment Regulations (continued)

- Revised draft released on September 30, 2016
  - References “Safety Assessment Letter” from NHTSA Policy
- Public Workshop in Sacramento on October 19, 2016
- Formal proposed rules published on March 10, 2017
  - “Driverless” Testing and Operation will now be allowed
- Initial comments will be solicited until April 24, 2017
- Public Hearing in Sacramento on April 25, 2017
- Revisions, as necessary
- AV Deployment Regulations expected to be finalized by September; effective by December 2017
Questions?

https://www.dmv.ca.gov/portal/dmv/detail/vr/autonomous/bkgd
Michigan AV Policy Update
Matt Smith, MDOT
Public Act No. 332
Mike Kowall (R-White Lake), Primary Sponsor

Putting AV’s on the Road

Eliminates “test only” restriction

Allows driverless operation on public roads at any time
Public Act No. 332

Mike Kowall (R-White Lake), Primary Sponsor

Open for Transport

Platooning of commercial vehicles

Supporting the military, large shipping or logistics companies
Public Act No. 332
Mike Kowall (R-White Lake), Primary Sponsor

A New Way to Ride

Automated vehicle networks connected to consumers

Creates array of travel options for consumers
Public Act No. 332
Mike Kowall (R-White Lake), Primary Sponsor

State of Michigan Support

Council on Future Mobility reports to the legislature annually on new laws or regulations

What new policies would help enhance safety, mobility and the state’s economy through this technology
Public Act No. 333
Mike Kowall (R-White Lake), Primary Sponsor

Supports Manufacturers

Provides specific standards for SAVE projects

Vehicle networks started and controlled by vehicle manufacturers
Public Act No. 334
Rebekah Warren (D-Ann Arbor), Primary Sponsor

World Class Destination

Creates the American Center for Mobility (ACM)

The mission of the ACM is still evolving and will include vehicle testing in real world conditions
Public Act No. 335

Ken Horn (R-Frankenmuth), Primary Sponsor

Protection for Mechanics

Ensures that a mechanic, acting in compliance, will not be exposed to liability when working on autonomous technology.
Feedback or Questions?
CAV Related Research Discussions
Galen McGill or Scott Marler