Planning for Connected and Autonomous Vehicles

Nicole Katsikides
Deputy Director, Office of Planning and Preliminary Engineering
Maryland Department of Transportation State Highway Administration

Presentation to the Intelligent Transportation Society of Maryland
September 22, 2016
What We Know

- CV/AV is here
- Moving faster than we thought
- Technology is changing faster than we are
- Systems and processes are for a DOT of 10-20 years ago
- Infrastructure management might change significantly
- Data is the new frontier
Current MDOT CV/AV Applications

- Supporting Operations
- Planning for CV/AV
- Communicating and Networking
- Test Bed/Equipment
- Research and Analysis
### Chart Example

#### Table:

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Duration</th>
<th>Length (miles)</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottleneck</td>
<td>I-695 HOV S @ I-295/PRINCE WILLIAM PKWY/EXIT 138</td>
<td>4 d 22 h 17 m</td>
<td>7.45 VA</td>
<td></td>
</tr>
<tr>
<td>Bottleneck</td>
<td>I-95 S @ I-270/EXIT 360</td>
<td>4 d 20 h 1 m</td>
<td>7.09 VA</td>
<td></td>
</tr>
<tr>
<td>Bottleneck</td>
<td>US-155 S @ US-15 RUG/AMES FRED ROY</td>
<td>4 d 23 h 17 m</td>
<td>5.54 VA</td>
<td></td>
</tr>
<tr>
<td>Bottleneck</td>
<td>I-495 CCW @ MD-189/CONNECTicut AVE/EXIT 33</td>
<td>4 d 19 h 53 m</td>
<td>5.21 MD</td>
<td></td>
</tr>
<tr>
<td>Bottleneck</td>
<td>VA-12 N @ PADLEY RD</td>
<td>4 d 10 h 2 m</td>
<td>4.14 VA</td>
<td></td>
</tr>
<tr>
<td>Bottleneck</td>
<td>US-13 N @ I-695/VA-275/PACIFIC HWY</td>
<td>4 d 21 h 52 m</td>
<td>3.90 VA</td>
<td></td>
</tr>
<tr>
<td>Bottleneck</td>
<td>MD-315 N @ MD-310/PADLEY RD/PACIFIC RD/MD-315</td>
<td>4 d 19 h 55 m</td>
<td>3.61 MD</td>
<td></td>
</tr>
</tbody>
</table>
Opportunities for CV/AV for MDOT

- **Operations**
  - Vehicle to Vehicle and Vehicle to Infrastructure exchanges
  - Integrated corridor management and active traffic management
  - Incident management and traveler information systems
  - Congestion reduction

- **Safety Improvements**
  - Reduced incidents
  - Better communication with drivers

- **Freight**
  - Truck parking, real time parking and routing
  - Improved State level understanding of freight activities (O/D, diversions, economic activity)

- **Finance, Policy and Planning**
  - CV/AV may support VMT/data collection and user revenues/tolls
  - Wealth of data and analytical opportunity to support policy, planning and investment
What We are Doing

- Supporting MDOT's CV/AV Planning and Policy Working Group
- Planning from the TBU (MDOTSHA) perspective
- Assessing other states
- Identifying our readiness
- Taking initial steps to prepare and partner
Short Term Actions at MDOTSHA

- Develop readiness assessment
- Develop a data governance framework
- Review current laws and codes
- Engage University of Maryland/CATT Lab
- Work with FHWA on integration
- Partner with I-95 Corridor Coalition on ITS truck parking
- Improve upon truck probe data
- Join FHWA Pooled Fund work by October 1, 2016
Long Term Actions

- Evaluate business processes to support CV/AV
- Identify traffic and congestion implications
- Identify safety implications
- Evaluate communications and develop a communications strategic plan with DOIT
- Engage universities to support MDOT in research, planning and implementation
- Evaluate procurement readiness
- Place focus on automated/autonomous vehicles
- Evaluate traffic simulation manual
- TSM&O – Signal Phase/timing analysis
- Develop performance analytical tools to capture CV/AV data and analyze it
- Understand mapping needs:
  - MDOT SHA pursuing Mobile LiDAR
  - Identify what information we need in mapping to support CV/AV
- Investigate Spectrum, WiFi 5.9 (follow up with FHWA Turner Fairbank)
Contact

Nicole Katsikides, Deputy Director
MDOTSHA
OPPE
410-545-5511
nkatsikides@sha.state.md.us