CONNECTED AND AUTOMATED VEHICLES IN VIRGINIA

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May 14, 2019
Overview

Technology Trends

Testing Demos and Pilots in Virginia

Next Steps
Headlines: What is really happening out there

125 million connected vehicles by 2022, 5G coming

Tesla sued over California 'autopilot' death

Tesla pushes forward on autonomous driving with new computer chip

Coming soon to China: the car of the future

Uber scientist says some time before self-driving cars dominate the road
Quiz Time!

- Connected Vehicle Environment
- Autonomous Vehicle (Self-Driving)
- Automated Vehicles
<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Level 0</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Automation</td>
<td>Driver assistance</td>
<td>Partial automation</td>
<td>Limited self-driving (conditional automation)</td>
<td>Full self-driving under certain conditions (high automation)</td>
<td>Full self-driving under all conditions (full automation)</td>
</tr>
<tr>
<td></td>
<td>No automation.</td>
<td>Can assist driver in some situations.</td>
<td>Can take control of speed and lane position in certain conditions.</td>
<td>Can be in full control in certain conditions and will inform the driver to take control.</td>
<td>Can be in full control for the entire trip in these conditions and can operate without a driver.</td>
<td>Can operate without a human driver and need not have human occupants.</td>
</tr>
</tbody>
</table>

**Driver**

|         | In complete control at all times. | Must monitor, engage controls, and be ready to take over control quickly at any moment. | Must monitor and be ready to take over control quickly at any moment. | Must be ready to take control quickly when informed. | Not needed | Not needed |

*Source: GHSA*
Testing, Demos, and Pilots are Active in Virginia

Virginia Tech Transportation Institute
Fall 2017

More info at https://www.youtube.com/watch?v=EwujR1ARsog
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FHWA Truck Platooning Demonstration on I-66
September 13-15, 2017

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VDOT’s Vision for Connected and Automated Vehicles

An environment where Connected and Automated Vehicle applications provide connectivity between vehicles, roadside infrastructure and wireless devices.

With these objectives:

• Increased Safety
• Improved Mobility
• Reduced Infrastructure Investments
• Enhanced Traveler Information
Virginia’s Unique Strengths

- Diverse highway system with a good state of repair
- An “Open-for-business” regulatory environment for innovative transportation solutions
- Data driven commitment to innovation
- Trusted world-class research and testing capabilities
- Capable knowledge based work force, including a strong military presence.
Focus Areas of the Connected and Automated Vehicle Program

Outreach and Coordination

Leadership

Deployments

Planning

Policy
Virginia Connected Corridors Partnership

To facilitate the understanding of CV deployment, the Virginia Department of Transportation has partnered with the Virginia Tech Transportation Institute to create the Virginia Connected Corridors.
Smart Roads at Virginia Tech Transportation Institute
Northern Virginia Challenges
The test beds include cellular communications to support cellular-based applications.
National SPaT Challenge

To challenge state and local public sector transportation 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 state by January 2020.

What is SPaT?

A Signal Phase and Timing (SPaT) message defines the current intersection signal light phases. The current state of all lanes at intersection are provided, as well as any active pre-emption or priority.
National SPaT Challenge Deployment Map

26 States Committed
216 Signal Operating
2,121 Signals Planned

Source: NOCoE
Updated 2/12/19
Overview

Technology Discussion and Trends

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Next Steps
Next Steps

- Automated Maintenance Vehicles
- Work Zone Information
- First and Last Mile Solutions
- Work Force Development
- Fleet Challenge
- Industry Coordination
- Data Management and Security
- Leveraging Broadband
Thank you!