Overview

What’s Happening Out There?

Virginia Connected Corridors

Testing, Demos, and Pilots
Soooo, what's really happening out there?

Tesla Driver Gets Auto-Pilot Ticket Dismissed After ‘Driving’ With Feet Out Window

A Tesla driver was ticketed for driving while on his cellphone, and with his FEET out the window. The car was self-driving and he was merely along for the ride.

In AIM, vehicles can often cross an intersection without stopping.

Uber
Self-driving Uber kills Arizona woman in first fatal crash involving pedestrian

Tempe police said car was in autonomous mode at the time of the crash and that the vehicle hit a woman who later died at a hospital.
# Levels of Vehicle Autonomy

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Level 0 No Automation</th>
<th>Level 1 Driver assistance</th>
<th>Level 2 Partial automation</th>
<th>Level 3 Limited self-driving (conditional automation)</th>
<th>Level 4 Full self-driving under certain conditions (high automation)</th>
<th>Level 5 Full self-driving under all conditions (full automation)</th>
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</thead>
<tbody>
<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>
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| 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 |

### Automated Driving Systems (ADS)
The image depicts the Gartner Hype Cycle, a model that illustrates the lifecycle of a technology or innovation. The cycle is divided into five stages:

1. **Technology Trigger**: Early stage where the technology or innovation is introduced, often with high expectations.
2. **Peak of Inflated Expectations**: Phase where enthusiasm and perceptions of benefits are high, but actual performance may not meet expectations.
3. **Trough of Disillusionment**: Stage where disillusionment sets in as the technology or innovation fails to meet expectations, leading to a drop in interest.
4. **Slope of Enlightenment**: Period where more realistic expectations begin to emerge, and the technology starts to show promise.
5. **Plateau of Productivity**: Final phase where the technology has proven its value and is widely adopted, reaching a state of productivity.

Key events and trends are highlighted at various points on the cycle, such as supplier proliferation, mass media hype beginning, early adopters investigating, and supplier consolidation and failures. The cycle also includes timelines and percentages, indicating the percentage of the potential audience that has adopted the innovation at different stages.
What are Others Doing?
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VDOT’s Vision for Connected and Automated Vehicles

VDOT envisions a future environment where Connected and Automated Vehicle applications provide connectivity between vehicles, roadside infrastructure and wireless devices. This interconnected environment is expected to meet the following objectives:

- Increased Safety
- Improved Mobility
- Reduced Infrastructure Investments
- Enhanced Traveler Information
Connected and Automated Vehicle Program Development

• Full-Time Program Manager since Fall 2016

• Connected and Automated Vehicle Executive Steering Committee Established
  Sets strategic direction and priorities for VDOT’s CAV Program, including outreach & advocacy, implementation and more

• Connected and Automated Program Plan - Available Now at http://virginiadot.org/automated
Contact us for more information!

Please visit http://virginiadot.org/automated
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Testing, Demos, and Pilots
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.
Virginia Connected Corridors

Mission: Provide an open connected vehicle environment where concepts can be developed, tested, deployed, and evaluated in real world operating environments.
Smart Roads at Virginia Tech Transportation Institute
Northern Virginia Challenges
Northern Virginia Test Bed: DSRC Deployments

Arterial/Intersection RSUs (30)
Freeway RSUs (19)

The test beds include cellular communications to support cellular-based applications
VCC Work Zone Components

VCC Cloud
Data and Processing Hub

VCC Monitor
Situation Awareness

VCC Mobile
Driver Interface

VCC Worker
Dynamic Worker Location and Activity

VCC Vest

Work Zone Builder
Detailed Work Zone Definition
Overview

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Virginia Connected Corridors

Testing, Demos, and Pilots
Testing, Demos, and Pilots are Active in Virginia

Virginia Tech Transportation Institute
Fall 2017

FORD AND VIRGINIA TECH TRANSPORTATION INSTITUTE ARE USING THIS CAR-SEAT COSTUME
Testing, Demos, and Pilots are Active in Virginia

Virginia Tech Transportation Institute
Fall 2017

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

More info at https://www.youtube.com/watch?v=iNTKqh7i5jQ
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Testing, Demos, and Pilots are Active in Virginia (cont.)

FHWA Connected Vehicle Testing on I-95 Express Lanes
June 2018
National SPaT Challenge

What is the Challenge?

To challenge state and local public sector transportation IOOs 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. SPaT message defined by the SAE J2735 standard.
Virginia Connected Corridor’s SPaT Challenge Architecture

[Diagram showing the architecture with components like 2070 Controller, Cohda RSU, VCC Cloud, Android Phone VCC Mobile App, and Cellular Carrier.]
One more thing!
SmarterRoads Hackathon Series

All submission are posted on the DevPost Hackathon Platform

#SmarterRoadsVA
SmarterRoads Hackathon & Idea Jam Objectives

- Accelerate Technology Development and Implementation
- Promote Existing Open Data Products
- Develop and Strengthen Relationships

SERIES GOAL: Create and share a model to follow for future events
Overview

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Thank you!

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