

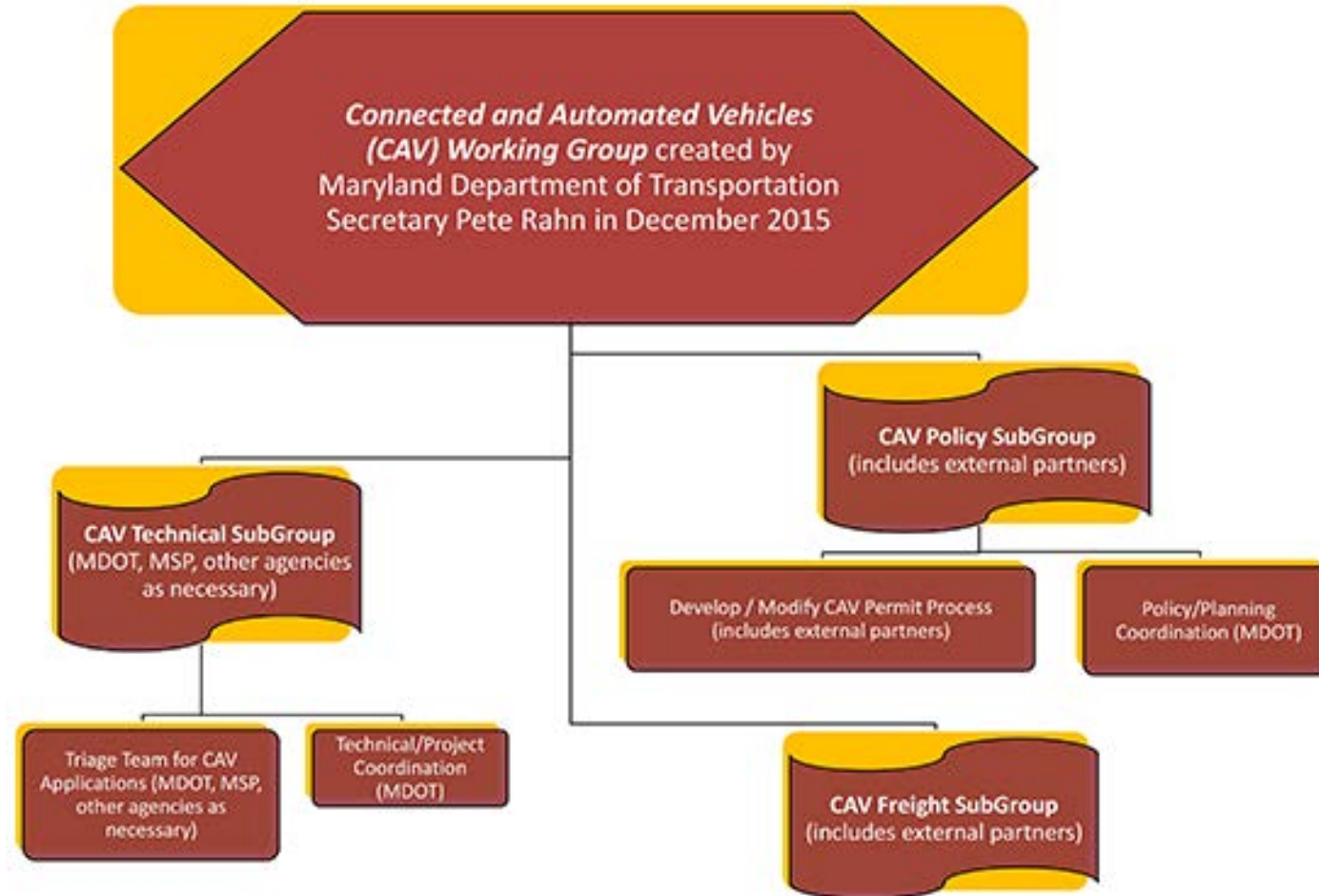
MDOT State Highway Administration

Connected & Automated Vehicle Activities



National Rural ITS Conference
October 2018

MDOT's CAV Working Group



Maryland Department of Transportation

April 2018

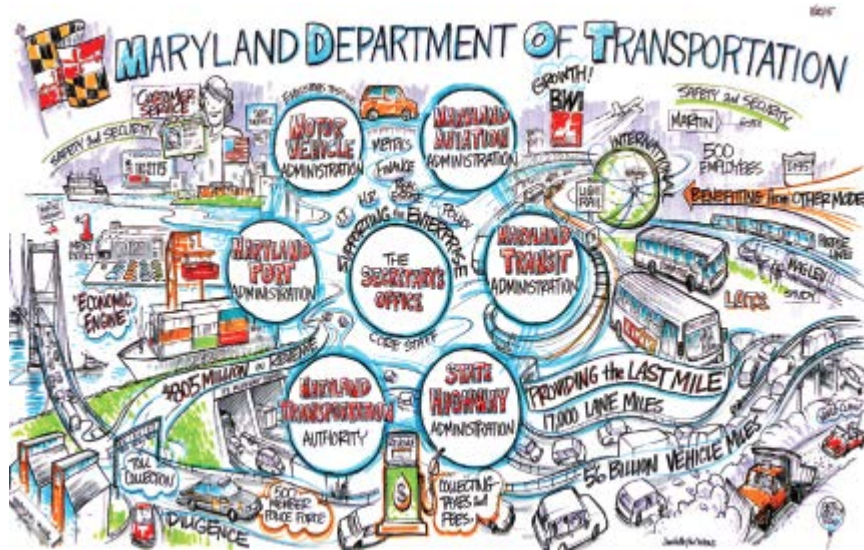
MDOT's CAV Working Group

- Open discussions on CAV with TBUs, private sector, academia, law enforcement, and legislators – sharing knowledge and discussing issues, concerns, and ideas
- AV Proving Ground application to US DOT - 2016
- Permitting process for HAV testing - 2017
- CAV Plan being developed by The Secretary's Office – 2018
- Individual TBU activities

Maryland DOT

The Maryland Department of Transportation (MDOT) is an organization comprised of six business units and one Authority.

- The Secretary's Office
- State Highway Administration
- Maryland Transit Administration
- Motor Vehicle Administration
- Maryland Port Administration
- Maryland Aviation Administration
- Maryland Transportation Authority





MDOT SHA – Internal CAV Group

- **Multi-Disciplinary Engagement**

- Representation from planning, engineering, operations, IT, maintenance, policy, and administration

- **Subject Matter Experts**

- University of Maryland Center for Advanced Transportation Technology
- Consultant experts

- **First Project: We Need a Plan!**

- Developed a Strategic Action Plan
- Needed balance of strategic and tactical in the face of fast evolving space
- Living document

MDOT SHA - CAV Strategic Action Plan

1. Baseline: What is CAV?
2. Planning Activities
3. Take Action: Pilot CAV Programs
4. Enabling Actions: Build a Support Program



MDOT SHA → Vision For CAV

“Embrace technology and next generation mobility trends to provide safe & reliable travel for people and goods within Maryland.”



MDOT SHA → Vision For CAV

GOAL 1:

- be an attractive partner; Maryland is “open for business.”

GOAL 2:

- begin deploying CAV technology to gain experience through pilot projects.

GOAL 3:

- Establish foundational systems to support future CAV deployment.

GOAL 4:

- Enable CAV benefits for customers.

GOAL 5:

- Look for opportunities to leverage CAV technologies to support existing business processes.

Vision for CAV → Strategies to Achieve

The US 1 Innovative Tech Deployment Corridor	Arterial traffic management needs and CAV readiness efforts, while gaining lessons learned.
Future Innovative Technology Deployment Corridors	Additional corridors present opportunity for CAV pilots and additional ITS deployment.
Coordinate with Ongoing Major Projects	Keep dialogue open with major projects (e.g., I-270 Innovative Congestion Management project)
Pursue Federal Grant Opportunities	Federal money available through annual grant requests = have project proposals on-the-shelf.
Partner with the Aberdeen Proving Ground	Keep dialogue open with Aberdeen Test Center, looking for opportunities to partner.
Partner with the U.S. DOT	FHWA has shown interest in CAV testing on some of MD's roadways and facilities .
Leverage our Relationship with Maryland Academic Institutions	The University of Maryland is a national leader in developing transportation technology, and is already an MDOT SHA partner.
Robust Telecommunications Infrastructure	A comprehensive telecommunications plan should be mapped out with CAV in mind.
Enhance Road Markings and Signage	Monitor national research and lessons learned from other states, and periodically discuss.
Track and Influence Policy & Legislation	Education on CAV, testing opportunities, and the impacts on economic development.

Develop a Robust Data Governance Plan	Address privacy and security, storing data, sharing policies, public information requests, and other data-related issues.
Pay Attention to Staffing & Skills Development	Staff training and skills for a rapidly evolving CAV ecosystem.
Internal Awareness of CAV	Awareness within MDOT SHA, and across the transportation business units (TBUs). One MDOT.
External Outreach & Education	Maryland is "open for business" and wants to attract CAV development.
Involvement/Visibility in National Activities	Stay engaged in the CV Pooled Fund Study and other national activities, and share the experiences internally.
MDOT SHA Offices and Engagement in CAV	Maintain internal MDOT SHA CAV Working Group as a clearinghouse, a coordination point, and an opportunity for everyone to contribute.
Support the MDOT SHA CAV Working Group	A great opportunity to garner feedback from other sectors of the industry, impact legislative activity, and connect with other TBUs.

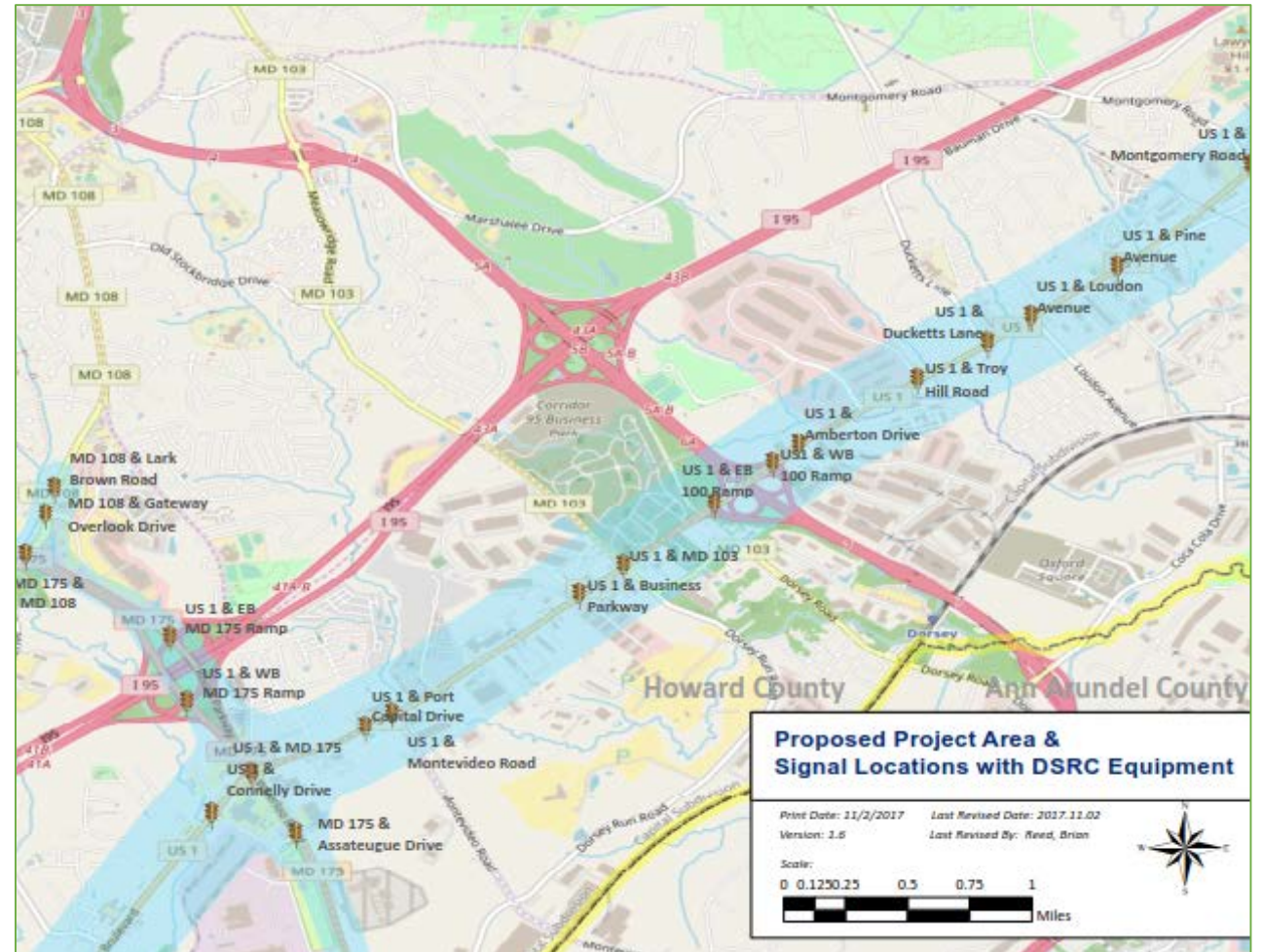
2018 Actions – Implementing the Plan

- Prioritize the Recommendations
- Begin a Connected Vehicle Pilot Demonstration Project
- Draft an Outreach Plan
- Work with Other TBU's on CAV Plans
- Telecommunications Strategic Plan
- Pursue Federal Grants
- Explore Workforce Needs



US 1 Pilot Project

- ✓ Adaptive Signal Control for congestion management
- ✓ ITS Devices for incident management
- ✓ **DSRC Pilot Deployment for CV testing**



CV Pilot Objectives

→ **Signal Shop:** Meet the National SPaT Challenge

- Deploy 20 intersections with Signal Phase and Timing broadcast from DSRC radios via Connected Vehicle Roadside Units.

→ **CHART:** Become an early adopter of CV Technology to pave the way for future CAV Readiness

- Meet the National SPaT Challenge
- Test and evaluate DSRC RSUs data capture, analysis and storage.
- Implement best practices to own, operate, and maintain DSRC RSUs within one or more corridors, within five years.
- Provide a mechanism for supporting business partnerships for CAV firms in MD and utilize the demonstration for testing corridors.

No Shortage of “ToDo” Actions

- MDOT CAV Working Group
- Data Governance Plan
- Staffing and Skill Development
- Internal Awareness of CAV
- External Outreach and Education
- Grant Applications
- Awareness of National Activities

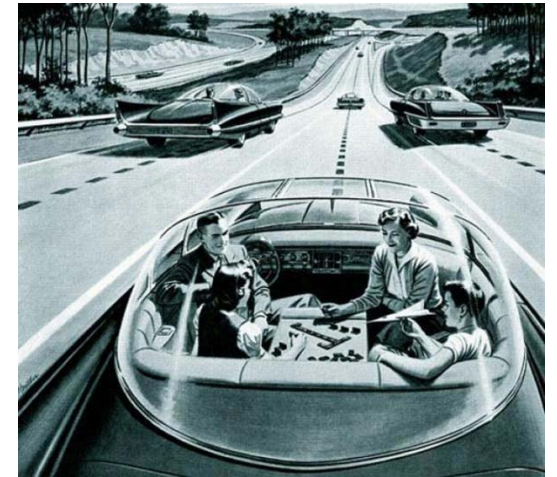


Advice to State DOT's in AV 3.0

AV 3.0 Guidance to States	MDOT and SHA
Adopt terminology defined through voluntary technical standards.	The need to address terminology and be consistent and is discussed in the SHA CAV Strategic Action Plan
Assess State roadway readiness.	One of the key outcomes of the CAV Strategic Action Plan and driver for many of the strategies
Consider test driver training and licensing procedures for test vehicles.	MVA currently managing the licensing procedures for test vehicles
Support safe testing and operations of AVs on public roadways.	MDOT CAV Working Group considers this a high priority
Learn from testing and pilots to support highway system readiness.	Addressed heavily in the CAV Strategic Action Plan, and the emphasis in doing the US 1 pilot project
Build organizational capacity to prepare for AVs in communities.	Addressed heavily in the CAV Strategic Action Plan, and reflected in recent organizational changes made to Office of CHART
Identify data needs and opportunities to exchange data.	Addressed heavily in the CAV Strategic Action Plan, and one of the projects OPPE is currently leading
Support scenario development and transportation planning for automation	A component of OPPE planning already, and will increase with time

CAV Activities Are Growing...

- 👍 Our approach builds on lessons learned from others but is also reasonably aggressive
- 👍 Now that the plan is done – it's time to “operationalize” our actions
- 👍 Regular updates of the plan will be initiated
- 👍 Future issues will arise (e.g., procurement), and we fully intend to stay on top of national activities



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