CAT Coalition
Planning Scenarios Working Group
November 6, 2019 Webinar
Notes and Summary of Discussions

Summary of Action Items

1. Staff to identify presenters for future webinars that can speak about how to create plans that are resilient against an array of potential futures, and how to conduct robust decision making that is needed.

2. Staff to work with Ray Derr to identify speakers on the recent NCHRP Projects related to CAV/CAT Planning for the upcoming webinar(s).

3. Staff to work to arrange a presentation from AMPO on an upcoming webinar

4. Staff to work to arrange a presentation on one or more Smart City/Smart Region deployments, with the emphasis on what is known about how the technology deployments will impact travel demand and travel behavior.

Welcome

Matt Hardy welcomed members and noted this is the CAT Coalition working group on planning, and as we will discuss, will combine efforts with the CAV group within the AASHTO Committee on Planning (COP) as both efforts are looking to plan for the eventual deployment of CAV/CAT.

Matt reviewed the agenda and introduced the co-chairs of this working group being Sondra Rosenberg (NVDOT) and Justine Sydello (CDM Smith).

- Sondra welcomed the group and thanked them for their involvement with both groups. She recognized that planning is very challenging in this arena and she is looking forward to learning from today's speaker and other members of the group. In addition to serving as the co-chair of this group, Sondra chairs the CAV working group in the AASHTO COP;

- Justine echoed Sondra's comments and noted that she is looking forward to this group having a regular meeting frequency and learning more about the activities of both the public and private sectors.

Update on the CAT Coalition

Matt provided an overview of the AASHTO COP. Scott Bennett (Arkansas DOT) is the chair. Lynn Weiskopf (NYSDOT) is the vice-chair.

The COP has formed several technical working groups addressing topic specific areas. One of these is the CAV Planning Working Group. The purpose is to serve as a forum for information sharing and dissemination. The working groups are not formed to create policy, but instead focus on information exchange and on identifying needs for additional resources. In the case of the CAV Working Group they are sharing information on how state DOTs or MPOs are planning for CAVs. Since goals and topic area are very similar, Matt and Sondra discussed combining efforts of these two groups.

Tom Kern provided an update on the overall Cooperative Automated Transportation (CAT) Coalition. Tom noted that the two co-chairs of the coalition are Roger Millar (Secretary of Transportation for WSDOT) and Jennifer Cohen (Secretary of Transportation for Delaware DOT).   Tom stepped members through the organization chart of the CAT Coalition, explaining how the working groups are organized into three focus areas. Tom noted that the coalition has over 500 members and the grouping into focus areas and working groups helps to ensure all members are able to interact. The Planning Scenarios WG is "paired" with the Technical Resources Working Group, which is chaired by Faisal Saleem, MCDOT. The Technical Resources WG is responsible for exploring resources, summarizing resources, and developing resources.

Tom also noted the Policy, Legislative, and Regulatory (PLR) Working Group that recently looked at CAT Policy Frameworks around the country and internationally. Tom noted that a summary table is available on the CAT website, including approximately 30 CAT Policy Frameworks and plans.

These and other resources can be found at the coalition website:
 http://transportationops.org/catcoalition.

Finally, Matt relayed a message from the CAT Coalition Co-Chairs recommending that each working group consider the following:
   - Identifying additional members for the working groups to broaden participation; and
   - Introducing and discussing MaaS and MOD in relation to CAT activities of the working groups.

Focus of this Working Group

Sondra led a discussion on the focus of this working group. Sondra reviewed four candidate activities that were previously identified for this group, as follows:
   - Use Case Framework;
       o Identified as a lower priority activity;
   - CAT Survey of Practitioners

- o Note that as the chairs understood that the PLR Working Group was conducting a survey they decided to hold off until that survey was completed and assess any additional questions that may need to be asked.
- ATCMTD Synthesis
  - o Identified as a lower priority activity;
- CAT International Scan
  - o Idea was to outreach and understand planning activities in other countries. Conversations were initiated at World Congress. May or may not be applicable

Sondra then opened the floor for input from members:

- One request from Oregon DOT was for increased sharing of information and approaches for how to create plans that are resilient against an array of potential futures, and how to conduct robust decision making that is needed. Stronger input and direction at that national level was requested.

- It was noted by Mark Norman that there are several NCHRP reports that would be applicable to this group, and possibly would address the issue described above. Mark noted about five activities under development right now and several recently completed activities.

  - o Matt suggested these could be presentations for the next webinar and suggested to work with Ray Derr to request the Principal Investigators to present on the topics.

- There was a suggestion for a topic on how the Smart Cities and Smart Regions all tie together and the likely role of 5G in supporting these efforts. Sondra noted that it might be most appropriate for this group to hear how the technologies deployed in Smart Cities and Regions will impact travel behavior and how they will impact how people travel. The topics related to the technology solutions and approaches are more appropriate in other working groups. Sondra noted she would appreciate a presentation on how AMPO working group is addressing these topics.

Guest Presentation: MnDOT's CAV Scenario Planning

Matt introduced Phillip Schaffner from MnDOT as the guest speaker for today. Phillip introduced the CAV Scenario Planning that MnDOT recently conducted. The motivation for this was that MnDOT recently completed a CAV Strategic Plan. As part of that planning effort, there was interest in conducting outreach throughout the state. Similarly, MnDOT is currently preparing for the next round of planning updates to their 'suite of plans'. For these and other reasons, MnDOT completed scenario planning for CAV.

Phillip noted that traditional forecasting works well when there is high certainty about the future and past trends are likely to continue. Scenario planning is an effective tool when there is uncertainty about the future travel patterns and especially when there are unreliable predictors or when agencies are preparing for multiple potential future scenarios.

Phillip presented a detailed summary of the CAV planning activities that MnDOT completed. A copy of Phillip's slides is included with the webinar summary.

Future Webinar Topics and Speakers

General discussion among webinar attendees helped identify several topics and speakers for future conversations. They include:

- TRB studies pertinent to planning – three recently completed reports could be the topics for the next webinar
- Recent MPO planning initiatives/AMPO studies (Bob Hazlett, Bill Keyrouze)
- Ohio DOT Scenario Planning and travel demand models (Rebecca as a possible speaker)
- Emerging Learnings in Maas/MoD Governance
- Oregon DOT Planning Efforts (Adam Argo) could present a similar study to the MnDOT presentation
- Washington State DOT Planning Efforts (Daniella Bremer/Ted Bailey/other) and the activities of the CAT Coalition Policy, Legislative, Regulatory (PLR) Working Group.

Next Webinar / Close

The next webinar is scheduled for Wednesday, January 8, 2020 from 12:00-1:30 ET.

CAT Planning Working Group – November 6, 2019 Webinar Participants

- Sondra Rosenberg (Chair)
- Justine Sydello (Chair)
- Phillip Schaffner
- Matt Hardy (AASHTO liaison)
- Gummada Murthy
- Adam Argo
- Alex Bettinardi
- Angel Gonzalez
- Bob Hazlett

- Charles Wade
- Christos Xenophontos
- Cindy Mueller
- Craig Wacker
- Curtis Nosal
- Daniela Bremmer
- Dave Miller
- Ed Seymour
- Hari Sripathi
- Jeff Lindley
- Kyle Miller

- Linda Sitz
- Lynn Weiskopf
- Marc Williams
- Mark Norman
- Shane McKenzie
- Tom Houck
- Tonya Norman
- Tom Kern
- Dean Deeter

AASHTO Committee on Planning: CAV Planning Working Group &

CAT Coalition: Planning Scenarios Working Group

Webinar
January 8, 2019

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Welcome and Agenda Review

1. **Welcome**
- MnDOT CAV Scenario Planning presented on November webinar available at:
  http://www.dot.state.mn.us/automated/docs/cav-scenario-planning-report.pdf

2. **Overview of AASHTO Activities**

3. **AMPO Sharing**
   - Bill Keyrouze, AMPO

4. **MPO Case Studies**
   - MetroPlan Orlando (Eric Hill)

   - Dallas/Ft. Worth (Tom Bamonte)

   - Atlanta Regional Commission - partnership with GDOT (Kofi Wakhisi)

5. **Next Webinar / Close**

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Agenda Item #1: Overview of AASHTO Activities

Matt Hardy (AASHTO)

Tom Kern (CAT Coalition)

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CAT Coalition – Organization (Current)
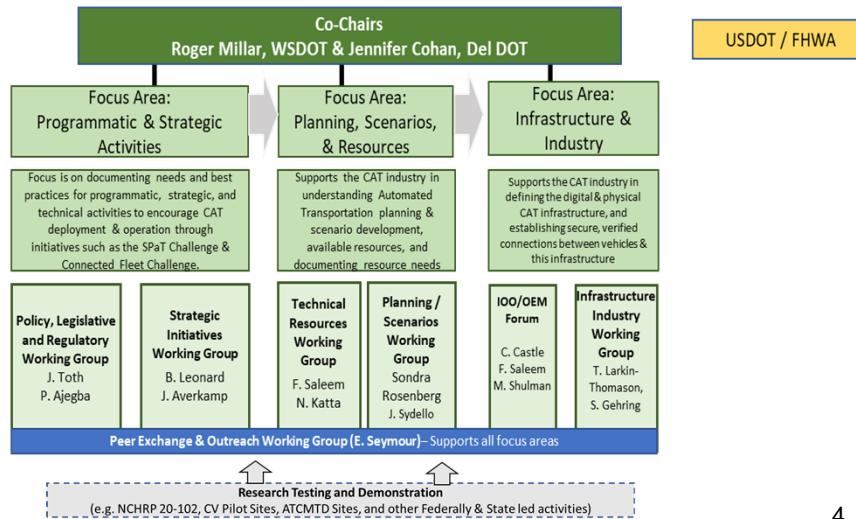
Co-Chairs
Roger Millar, WSDOT & Jennifer Cohan, Del DOT

USDOT / FHWA

Focus Area: Programmatic & Strategic Activities

Focus Area: Planning, Scenarios, & Resources

Focus Area: Infrastructure & Industry

Focus is on documenting needs and best practices for programmatic, strategic, and technical activities to encourage CAT deployment & operation through initiatives such as the SPaT Challenge & Connected Fleet Challenge.

Supports the CAT industry in understanding Automated Transportation planning & scenario development, available resources, and documenting resource needs

Supports the CAT industry in defining the digital & physical CAT infrastructure, and establishing secure, verified connections between vehicles & this infrastructure

Policy, Legislative and Regulatory Working Group
J. Toth
P. Ajegba

Strategic Initiatives Working Group
B. Leonard
J. Averkamp

Technical Resources Working Group
F. Saleem
N. Katta

Planning / Scenarios Working Group
Sondra Rosenberg
J. Sydello

IOO/OEM Forum
C. Castle
F. Saleem
M. Shulman

Infrastructure Industry Working Group
T. Larkin-Thomason,
S. Gehring

Peer Exchange & Outreach Working Group (E. Seymour) – Supports all focus areas

Research Testing and Demonstration
(e.g. NCHRP 20-102, CV Pilot Sites, ATCMTD Sites, and other Federally & State led activities)

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CAT Coalition Online
http://www.transportationops.org/catcoalition

CAT Coalition
Recent Activities / Accomplishments

Programmatic & Strategic Accomplishments (examples)

- CAT Funding and Staffing Survey Results & Summary
- Connected Fleet Challenge Resources & Website
- SPaT/Fleet Challenge Webinar Series Concludes January 2020
- Initiation of efforts for common (plain language) Automated Driving Terms Lexicon as used in AV Policy documents

Planning Scenarios & Resources Accomplishments (examples)

- Facilitated multi-agency presentation for a Cellular V2X Overview
- Initiated and progressed towards a new resource titled "CV Deployment Environment" –that broadly highlights communications and back end systems needs.
- Merging of CAT Coalition Planning Activities with AASHTO COP CAV Task Force:
  - Expanded emphasis to State DOT and local MPO CAV planning

Infrastructure & Industry Accomplishments (examples)

- Initiated activities for a "Communications 101" resource and developed the outline and preliminary content.
- Initiated efforts to survey AV shuttle pilot deployments to summarize as a resource
- Completed an outreach webinar to explain the Software tool chain for work zone MAP creation
- Completed Draft Clarifications for Consistent Implementations (CCI) for Signalized Intersections.
- Responding to industry indications of 2022 production vehicles with V2I safety applications

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Agenda Item #2:
Overview of AMPO CAV Planning Activities

Bill Keyrouze, AMPO

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Association of
Metropolitan
Planning
Organizations

AMPO

National Framework for Regional Vehicle Connectivity and Automation Planning

Bill Keyrouze
Technical Programs Director
Association of Metropolitan
Planning Organizations

Committed to enhancing MPOs' abilities to improve metropolitan transportation systems.

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AMPO's Technical Working Groups

AMPO is a nonprofit, membership organization established in 1994 to serve the needs and interests of Metropolitan Planning Organizations (MPOs). We offer our member MPOs technical assistance and training, conferences and workshops, legislative and rulemaking updates, newsletters and communications, research, a forum for transportation policy development and coalition building, and a variety of other services.

AMPO facilitates several long-standing technical working groups focused on transportation planning topic areas that are required or of interest to MPOs.

- Air Quality
- **Vehicle Connectivity and Automation**
- Performance-based Planning & Programming
- Travel Modeling
- GIS
- Public Involvement

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Vehicle Connectivity and Automation Working Group Background

Working Group Composition
- 15-20 core members from diverse backgrounds, MPO-size, and geography

Working Group Objectives
- Build technical, institutional, and policy capacity
- Leverage the benefits of deployment
- Address knowledge gaps
- Support the U.S. DOT's efforts

Working Group Activities and Products
- Four meetings between 2017 – 2018 each documented by a whitepaper
- National Framework for Regional Vehicle Connectivity and Automation Planning (Framework)
- Symposium in Denver, CO on November 14-15, 2018
   - Refine the Framework and identify next steps/items for potential further exploration

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National Framework for Regional Vehicle Connectivity and Automation Planning

Purpose: Provide a framework and tool as MPOs:

- Incorporate vehicle connectivity and automation into their metropolitan transportation planning process and work to guide its deployment to help meet regional transportation needs and goals

- Explore the potential impacts of vehicle connectivity and automation and their implications for the transportation system, its users, and the concept of mobility
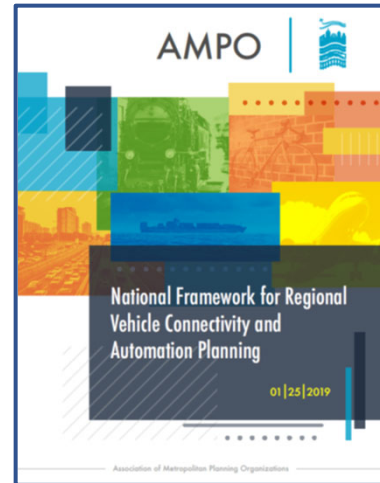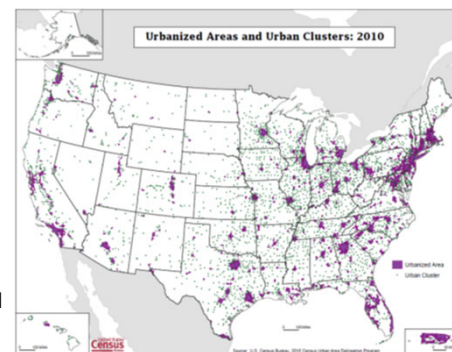
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National Framework for Regional Vehicle Connectivity and Automation Planning

Importance of the MPO:

- 80.7% of the U.S. population is urban and ~90% of the U.S. GDP is generated within metropolitan areas

- Shape the transportation system, maintain safety and equity, and move people and goods regardless of mode choice

- Through policy boards, technical committees, community outreach, and the development of core MPO products, build relationships with transportation agencies and decision makers, community organizations, and the public

- Through policy development and investment decisions, guide how vehicle connectivity and automation can help meet regional transportation needs and goals

United States Census Bureau Urbanized Areas and Urban Clusters 2019

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National Framework for Regional Vehicle Connectivity and Automation Planning

Vehicle Connectivity and Automation Impact Areas:

- Safety and security
- Operations
- Mobility and mode choice
- Freight
- Transportation demand
- Infrastructure design and capacity
- Funding and financing
- New transportation service markets

- Equity
- Data collection and analysis, housing, availability, and affordability
- Public acceptance
- Land use
- Air quality conformity
- Policy Engagement and Coordination
- Employment

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National Framework for Regional Vehicle Connectivity and Automation Planning

Recommendations:

- **Engagement, Coordination, and Collaboration**

- **Policies and Investment Decisions**

- **Other Planning Products and Processes**

- **Institutional Readiness**

  - *Resources and Best Practice Examples*

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National Framework for Regional Vehicle Connectivity and Automation Planning

Recommendations and Resources: Engagement, Coordination, and Collaboration

- Advise **policy** and **decision makers**
- Build **partnerships** to reduce redundancy and move forward in a unified direction
- **Inform** and **share** information regarding the current reality of vehicle connectivity and automation deployment
- Develop a **vision** and **goals** for the desired future of transportation with vehicle connectivity and automation to help understand how it can help meet regional transportation needs and goals
- Include **equity** in communications

  - *Fact Sheet, Resource Packet, Impact Areas Table*

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National Framework for Regional Vehicle Connectivity and Automation Planning

Recommendations and Resources: Policies and Investment Decisions

- Support deployment scenarios that help meet the **vision/goals** and transportation system needs, maintain **equity**, and do not decrease **safety, security, operations, reliability, or mobility**
- Support an environment that fosters **innovation**
- Incorporate discussions of vehicle connectivity and automation in the **metropolitan transportation plan**
- Ensure investment decisions support the **current** and **future** transportation system
- Encourage shared use/other strategies that will minimize or **mitigate** potential increases in **VMT**
- Support **data sharing** and explore opportunities for using vehicle connectivity and automation as an additional **data source**
- Build **partnerships** and **collaborate** with transportation partners and engage stakeholders for discussions on policy and investment decisions related to vehicle connectivity and automation

  - *Shared Use Mobility, Transportation Technology, and Intercity Transit Services, FTA 6/2018, and Impact Areas Worksheet*

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National Framework for Regional Vehicle Connectivity and Automation Planning

Recommendations and Resources: Other Planning Products and Processes
- Use **modeling** and **scenario planning** to explore future unknowns
- Be aware of the different dimensions of **readiness**: vehicle systems technology, supportive infrastructure, responsive institutions, and community acceptance
- Identify drivers, levers, triggers, and tipping points of scenarios to help **identify key milestones**
- Be aware of the potential for vehicle connectivity and automation to support **performance measures, target setting, and national goals**
- Explore the potential for vehicle connectivity and automation to **impact air quality and transportation conformity**
- Identify new **data sets** that are critical to **inform decisions** in the transportation planning process

  - *Transportation Scenario Planning for Connected and Automated Vehicles (FHWA) – coming soon*

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National Framework for Regional Vehicle Connectivity and Automation Planning

Recommendations and Resources: Institutional Readiness
- Identify needs for expanding **staff skills sets** or **restructuring program areas**
- When possible, provide training or **participation in regional, state, or national dialogues**
- Encourage staff to **monitor** the status
- Ensure staff are aware of how vehicle connectivity and automation technology **impacts** their program areas

  - *Resource Packet, Impact Areas Table, and Sample AV Statewide Procurement Language*

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Next Steps

- AMPO Vehicle Connectivity and Automation Working Group
  - Quarterly webinars and continued conversation

- AMPO National Framework for Regional Vehicle Connectivity and Automation Planning
  - In conversations with FHWA to update the Framework and develop additional materials

- Member and Stakeholder Engagement
  - AASHTO, APTA, FHWA, FTA, ITE, ITS America, NARC, TRB, and others

- AMPO Data Working Group
  - Coming soon

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Thank You

The working group meetings are documented in whitepapers. Whitepapers and other meeting materials may be found at: http://www.ampo.org/resources-publications/ampo-work-groups/connected-and-autonomous-vehicles-working-group/

For more information, contact:
Bill Keyrouze, Technical Program Director
bkeyrouze@ampo.org | 202.624.3683

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Agenda Item #3:
MPO Case Studies

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MetroPlan Orlando

Eric Hill

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Connected and Automated Vehicle (CAV) Readiness Study

Eric T. Hill

Director, Transportation System Management & Operations

AMPO Webinar - AASHTO CAV Working Group and CAT Coalition
January 8, 2020

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CAV Readiness Study

Commissioned Study

Purpose

Assess the region's readiness for arrival and integration of connected and automated vehicles (CAVs)

WSP

global5

Tasks

- Task 1 – CAV Industry Best Practices Review

- Task 2 – Evaluation of Existing Local Capabilities

- Task 3 – Host 3 Public Involvement Workshops

- Task 4 – Recommendations for CAV Preparedness

- Task 5 – Final Report

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Connected Vehicle (CV)

Onboard wireless communications share information and alerts to

- Improve safety
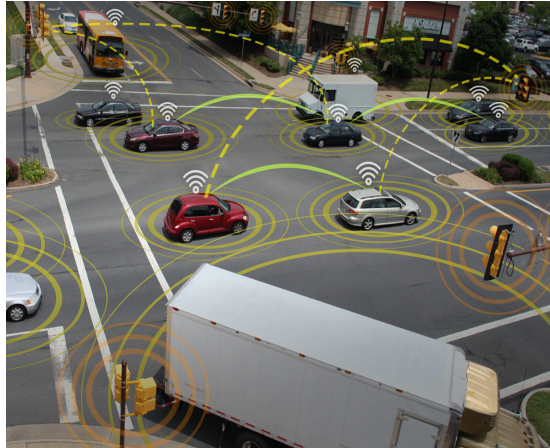- Increase mobility
- Reduce congestion

IMAGE SOURCE: USDOT

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CV Examples

- Collision Warning
- Reduce Speed
- Pedestrian Ahead
- Blind Spot Warning
- Wrong Way Vehicle
- Curve Speed Warning
- Work Zone Ahead

COLLISION WARNING

REDUCE SPEED

PEDESTRIAN AHEAD

IMAGE SOURCE: THEA CONNECTED VEHICLE PILOT

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Automated Vehicle (AV)

Has one or more aspects of a safety-critical driving functions controlled by something other than direct input by a human driver

IMAGE SOURCE: USDOT

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CAV Readiness Study

Connected Automated Vehicle (CAV)

The fully-automated, self-driving vehicle of the future that may not have a steering wheel or pedals for braking and accelerating – it will combine CV and AV capabilities
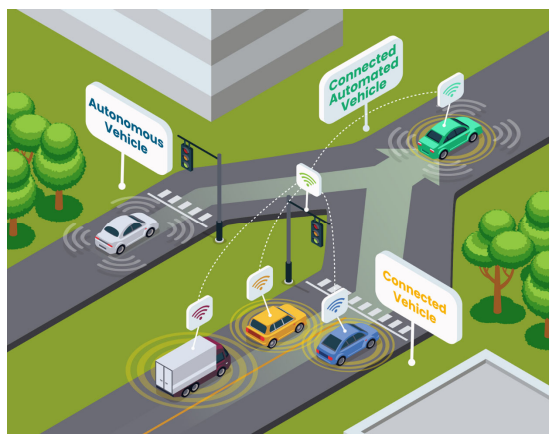

IMAGE SOURCE: USDOT

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Technical Memorandum 1

CAV Best Practices

- Analysis of current CAV planning nationwide
- Paradigm shift in technologies
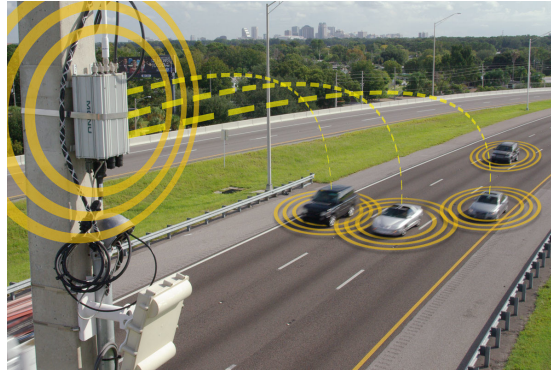- Policy and regulation changes

IMAGE SOURCE: GLOBAL-5

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CAV Industry Practices

- CAV projects: feasible; innovative; local need; and regional equity

- Consider CAV technologies to inform the decision-making process

- Match local needs and capabilities with emerging industry trends

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Technical Memorandum 2

Evaluation of Local
Existing Capabilities

- 23 jurisdictions
  interviewed in Osceola,
  Seminole and Orange
  counties

- AV and CV practices
  and infrastructure

IMAGE SOURCE: GLOBAL-5

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Potential Opportunities

- Establish CAV consortium

- Advance CAV deployments

- Install enhanced communication networks

- Expand workforce CAV knowledge

- Develop region-wide training

- Solve or mitigate equity challenges

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CAV Existing Capabilities

Pilot Deployments

- Lake Nona AV shuttle launched Sept 18
- UCF AV shuttle, CV and PedSafe programs funded by FDOT to launch in 2020 and 2021

IMAGE SOURCES: LAKE NONA, COAST AUTONOMOUS

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CAV Deployments

Orange County
- GreenWay connected vehicle (CV) infrastructure
- PedSafe CV pedestrian and bicycle collision avoidance system

Seminole County
- State Road 434 CV pilot
- Bluetooth/DSRC CV RSUs on Lake Mary Boulevard

Osceola County
- Dedicated Short Range Communications
- Neptune Road Corridor; NeoCity

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CAV Challenges

- Safety

- Security

- Impact on the network/mobility

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Task 3 – CAV Public Engagement

Public Involvement Workshops

- Osceola County, Kissimmee Civic Center
  Tuesday, October 29, 5 - 6:30 p.m.

- Seminole County, Lake Mary Events Center
  Tuesday, November 12, 5 - 6:30 p.m.

- Orange County, First United Methodist Church
  Tuesday, November 19, 5 - 6:30 p.m.

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CAV Workshop Format

- Open house

- PPT presentation
  - Technology overview
  - Local CAV deployments

- Live polling & eSurvey

- Open Discussion

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Survey Findings

- Attendees were generally knowledgeable about CAV terminology

- Favorable attitudes towards self-driving CAVs

- Anticipated CAV Benefits
  - Fewer crashes
  - Improved mobility for elderly & disabled

- CAV Concerns
  - Safety concerns
  - Do not trust the technology / do not want to give up control

- Prioritize funding for:
  - Training/workforce development
  - Educating the public about CAVs

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Workshop Discussions

- Safety – bicycle/pedestrian, general
- Data Security
- Impact on the network/mobility
- When and if CAV technologies will be standardized
- Insurance industry issues and considerations
- Whether and how roadway maintenance needs (striping) will intensify
- Lack of training for local staff and elected officials
- Whether and how a jurisdiction could "opt out" of supporting CAVs
- Growing pains during the transition from legacy vehicles to CAVs
- Ensuring equal access to CAV deployments and testing
- And more!

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Study Next Steps

- Prepare recommendations for CAV Preparedness

- Present to MetroPlan Board and committees

- Final Report

- CAV Study website:

https://metroplanorlando.org/programs-resources/transportation-system-management-operations/cav-readiness-study/

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What's Next for CAVs

Comments?

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Thank You

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Dallas / Ft. Worth

Tom Bamonte

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Atlanta Regional Commission

Kofi Wakhisi, ARC

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Future Webinar Topics

- March Webinar
  - Emphasis on State DOTs Readiness Planning
  - Volunteers or suggestions for speakers?

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Other Member Updates
(If time allows)

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Any Other Business / Adjourn

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