# CONNECTING THE DOTS

## HOW STATE DEPARTMENTS OF TRANSPORTATION ARE LAYING THE GROUNDWORK FOR CONNECTED AND AUTOMATED VEHICLES

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*The rapid development of Connected and Autonomous Vehicle (CAV) technologies means it is imperative that the federal government clearly articulate its policy priorities ahead of their deployment. In the absence of federal action, state governments have forged ahead to lay the groundwork for the safe deployment of these new technologies by coordinating on clear policy principles, guidelines, and interoperable standards. Scott Marler, Director of the Iowa Department of Transportation and Chair of the American Association of State Highway and Transportation Officials (AASHTO) Committee on Transportation System Operations, shared his insights on these state efforts with Washington CORE.*

## POLICY PRINCIPLES FOR CONNECTED AND AUTONOMOUS VEHICLES

AASHTO is a nonprofit association representing all 50 state Departments of Transportation (DOTs) and those of Washington D.C. and Puerto Rico. AASHTO's mission is to support the state DOTs through technical services, research, policy development, and professional development, and to prepare America for the transportation system of tomorrow.

In October 2021, AASHTO began developing ten CAV policy principles[1] to support the Biden administration as it advanced the Bipartisan Infrastructure Law.[2] The principles provided a basis for national policies focusing on outcomes such as safety and equity.[3] AASHTO engaged in a rich dialogue with its member committees (including representatives from dozens of state DOTs) to develop the policy principles, which exemplified the value that comes from broadly engaging within one's community, with an emphasis on stakeholder engagement and partnerships. As we say: "The answers are in the room. We just need to ask."

AASHTO has four regional chapters. My home state of Iowa is one of ten states participating in the Mid America Association of State Transport Officials (MAASTO)[4], which has created an MOU[5] on collaboration and planning for CAVs. The MOU provides a framework for a regional committee to discuss best practices, joint projects, and a strategy for CAVs, including a mid-to-long-term approach to fundamental priorities. Other regional chapters of AASHTO are now strongly considering emulating the MOU, which is an exciting development.

## SYNERGIES BETWEEN "CONNECTED" AND "AUTONOMOUS" TECHNOLOGIES

AASHTO is participating in the Cooperative Automated Transportation (CAT) Coalition, which has brought together partners, such as the Intelligent Transportation Society of America[6] and the Institute of Transportation Engineers[7] to provide a space for manufacturers and state DOTs to discuss the latest CAV developments. The coalition's all-of-the-above approach includes standards review, workshops and forums, white papers, and engagement surveys among members and stakeholders.

The CAT Coalition has two main tracks: connected vehicles and automated vehicles. While some software developers and manufacturers have argued that they do not need to be combined, the state DOTs understand that the two tracks provide tremendous synergies for traffic safety and should be developed simultaneously. There are limitations to a single automated vehicle's sensors, but connection enriches the ability of a vehicle to see further ahead, providing additional opportunities to plan responses for potential traffic flow occurrences.

## THE NEED FOR A COORDINATED NATIONAL STRATEGY AND VISION FOR CAVS

The debate over whether policies need to address both connected and automated vehicles is one of the many areas that demonstrates the need for clear federal guidance and a uniform nationwide policy on CAVs.

The federal government has proactively developed basic guidance and is funding research, but the U.S. still lacks a coordinated national strategy and vision for CAV deployment. Instead, there is an ad-hoc and patchwork set of state regulations: it is legal to have a driverless vehicle in Iowa, but if you cross into a neighboring state, that may not be the case. Any uniform national policy should focus on interoperability, so that these technologies work consistently and reliably anywhere they are deployed. The federal government must play a leading role in that effort.

## PREPARING FOR HUMAN DRIVERS TODAY, AUTOMATED VEHICLES TOMORROW

We have a saying at the Iowa DOT: "Things don't just happen. You have to make things happen." We spend a lot of time and energy actively seeking innovative solutions to technological challenges and participating in committees and interest groups to remain up-to-date. We have hired several employees to keep their fingers on the pulse of technology and policy developments and their implications for Iowa and the country. This initiative has made a big difference, and many state DOTs now have business units with professionals who conduct similar studies daily.

An important takeaway is that preparation is not always about technology. In Iowa, we have passed laws to require that a vehicle's registration documents indicate whether there are advanced technologies on board. This not only helps vehicle buyers and sellers but also allows law enforcement and others to understand the type of vehicle they are dealing with. Sometimes, these mundane approaches can have just as significant an impact as the advanced technologies themselves.

In Iowa, our approach is to prepare for the drivers of today and the automated vehicles of tomorrow, such as by investing in wider and brighter pavement and lane markings, to improve visibility for both humans and automated systems. We are also coordinating with other states to develop interoperable data standards in areas like construction work zones.[8]

Over time, data sharing will become increasingly critical, but America does not yet have consistent data standards across transportation modes. The sooner we have a national strategy and vision for CAVs, the sooner we can begin to connect state DOTs and ensure that travelers can experience seamless transportation, regardless of their mode of transportation.

**SCOTT MARLER** became the Director of the Iowa Department of Transportation in February 2020. Marler has worked for the Iowa DOT for 24 years, with experience in traffic operations, intelligent transportation systems, highway project development, regulatory compliance, and the natural environment. Marler has been active in leadership development and workforce planning and has also been instrumental in preparing for automated transportation and advanced technologies. Marler is an active leader with the American Association of State Transportation Officials (AASHTO), where he currently serves on the Board of Directors, and is the chair of the Committee on Transportation System Operations, and a co-chair of the Cooperative Automated Transportation Coalition. Marler holds a Master of Science degree from Miami University in Oxford, Ohio, and a Bachelor of Science degree from the University of Southern Mississippi in Hattiesburg.

## ENDNOTES

[1] AASHTO Connected and Automated Vehicle - Policy Principles: https://cav.transportation.org/wp-content/uploads/sites/61/2021/11/CAV-Policy-Principles-v4-press.pdf
[2] The Infrastructure Investment and Jobs Act, also known as the Bipartisan Infrastructure Law, provided $1 trillion in new funding to states and local governments to upgrade outdated roads, bridges, transit systems, and more. https://www.congress.gov/bill/117th-congress/house-bill/3684/text
[3] The ten principles are: 1) National strategy and vision are needed; 2) Safety is paramount; 3) Support sustainability; 4) The future is connected and automated; 5) Promote innovative Federal infrastructure investment; 6) Advance equity, access, and quality of life; 7) Preserve traditional state and Federal roles; 8) Uniform national policy is essential to avoid a patchwork approach; 9) Strong Federal leadership is crucial to foster industry collaboration and community engagement; and 10) Promote data sharing that preserves data privacy and security.
[4] MAASTO: http://maasto.net/aashto.aspx
[5] Memorandum of Understanding
[6] ITS America: https://itsa.org/
[7] Institute of Transportation Engineers: https://www.ite.org/
[8] Work Zone Data Exchange (WZDx) Specification: https://www.transportation.gov/av/data/wzdx

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Author: James Tetlow, Senior Research Aanalyst

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