



U.S. Department of Transportation
Federal Highway Administration

Office of Safety and Operations
Research and Development



Source: FHWA.



COLLABORATIVE

The **CARMA COLLABORATIVE** is growing a community of CARMA users, prospective users, and other stakeholders working to advance CDA through shared expertise and collaboration. The CARMA Collaborative conducts outreach activities to enhance stakeholder awareness and participation, and facilitates strategic partnerships to promote the use of CARMA in CDA research. These outreach activities include: virtual and in-person events, webinars, conferences, meetings, and communications materials (e.g., social media, multimedia, publications). Through these efforts, the CARMA collaborative aims to develop a community of organizations focused on CDA that are using CARMA.



SUPPORT

CARMA SUPPORT SERVICES provide stakeholders with knowledge and technical support on the CARMA product/tool suite to accelerate CDA research. Staff from the Saxton Transportation Operations Laboratory provide the tools and expertise to CARMA implementers. Support services hopes to accelerate CARMA innovation by providing excellent customer service to users.

CARMA ENGAGEMENT

The CARMA ecosystem engages various stakeholder groups to accelerate advancements and encourage collaboration in CDA research, development, and testing.



Federal Highway Administration's Cooperative Driving Automation Program

Automated Vehicles Working Together

Automation is the future of transportation. Research on autonomous driving technology and vehicles is taking place throughout America, and the technology is primed to transform existing and future transportation systems. As the technology for autonomous vehicles continues to develop and eventually becomes ready for real-world testing, cooperative automation can improve the efficiency and safety of these vehicles within the transportation system.

Cooperative driving automation (CDA) supports and enables communication between vehicles with driving automation features, other road users, and transportation infrastructure. Once deployed, CDA has the potential to improve transportation efficiency, facilitate freight movement, increase productivity, and save billions by reducing the need to increase roadway facilities. Most importantly, CDA has the potential to reduce crashes caused by human error and save lives.

FHWA CDA PROGRAM

The Federal Highway Administration's (FHWA's) CDA program is shaping the future of transportation systems management and operations (TSMO) by strengthening infrastructure and developing platforms for collaborative research and development (R&D) of CDA to advance the safety, efficiency, and sustainability of the entire transportation system. The program fosters the development of the digital infrastructure necessary to support CDA as autonomous vehicles continue to develop and eventually enter the Nation's roadways.

For more information, visit <https://highways.dot.gov/research/operations/CARMA> or contact the CDA Program at CARMA@dot.gov

CARMASM Ecosystem

To advance CDA R&D, the U.S. Department of Transportation developed CARMA, a technology-enabling initiative under the FHWA CDA program. CARMA focuses on improving the transportation system by leveraging emerging automated driving technology and vehicle-to-everything (V2X) technology to enable increased safety, operational efficiency, and sustainability in moving people and goods.

Through collaboration and open-source software (OSS) development, CARMA enables researchers and engineers to research, develop, test, and evaluate CDA features on infrastructure and vehicles equipped with driving automation features. This research will establish the foundation for the adoption of CDA across transportation infrastructure and vehicle make and model.

Under the CARMA ecosystem is a network of products, research tracks, evaluation tools, and engagement strategies that all use CDA to improve transportation safety and performance.

The CARMA ecosystem has proven to be an innovative set of OSS tools with strong stakeholder support. The ecosystem is poised to move into a new phase of R&D focused on benefit analysis and application testing, building toward large-scale test track and/or on-road pilot testing.

