



CDA 1Tenth: FHWA's Small-Scale Cooperative Driving Automation (CDA) Program

The Federal Highway Administration (FHWA) has kicked off a research program to develop a scaled-down automation platform for demonstration and development. This system showcases the benefits of CDA and automation technologies and extends research capabilities in physical testing environments that are cost-friendly and more accessible.

CDA 1Tenth tools provide an open-source and hands-on experience with automation technologies, concepts, and use cases. Users of these tools are welcome to contribute to and expand the community.



U.S. Department
of Transportation
**Federal Highway
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All images source: FHWA.

Advancing workforce development and demonstration capabilities with accessible and affordable tools.



Draws on previous experiences

CDA 1Tenth development leverages FHWA's previous experience with development of cooperative driving automation research tools.



Scaled-down vehicle platform

Smaller vehicles means fewer safety risks. Both space and cost savings from small-scale vehicles minimize the barrier to entry for transportation experts and organizations.



Industry-standard libraries

Software tools rely on widely used navigation, mapping, and localization packages and robotics software. Architecture prioritizes real-time monitoring, modularity, and flexible demonstrations.

What's Included?

- Bill of materials and build instructions.
- Manual, automated, and connected driving capabilities.
- Vehicle software packaged in Robot Operating System (ROS) 2TM.
- Desktop software to emulate the role of connected infrastructure.
- Integration support from developers.

Connect With Us

Interested in learning more or joining our stakeholder group? Email us at cda1tenth.fhwa@dot.gov.

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1. Macenski, S., T. Foote, B. Gerkey, C. Lalancette, and W. Woodall. 2020. "Robot Operating System 2: Design, Architecture, and Uses in the Wild." *Science Robotics* 7, no. 66.

2. Macenski, S., F. Martin, R. White, and J. Ginés Clavero. 2020. "The Marathon 2: A Navigation System." Presented at the 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). Las Vegas, NV: Institute of Electrical and Electronics Engineers and Robotics Society of Japan.