U.S. Department of Transportation
Federal Highway Administration
Turner-Fairbank Highway Research Center

cda COOPERATIVE DRIVING AUTOMATION PROGRAM

Cooperative Driving Automation (CDA) Program

Florida Automated Vehicles Summit

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Agenda

- CDA Program overview and roadmap.(1)
- Research tools for you.
- CDA in action!

Source: FHWA.

Source: FHWA.

Program Overview

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The Transportation System

Consisting of the means and equipment necessary for the **safe movement of people and goods**.

Management of Operations

About 50 percent of congestion is reoccurring.(2)

This reoccurrence is due to bottlenecks (40 percent) and poor signal timing (5 percent).(2)

Reliable Performance

More than 50 percent of congestion is caused by temporary disruptions that take away part of the roadway from use.

This congestion is due to work zones (10 percent), weather (15 percent), traffic incidents (25 percent), and special events (5 percent).(3–5)

Movement of Goods

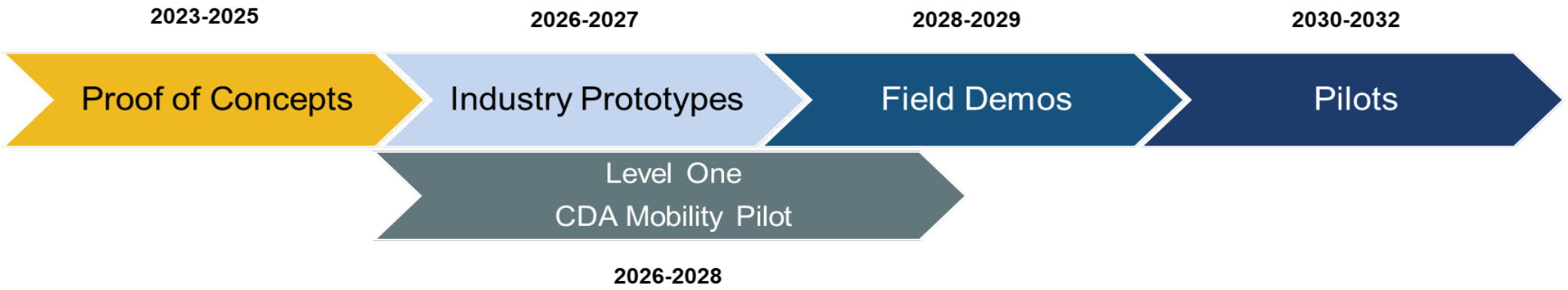
As the demand for freight transportation continues to rise at a disproportionate rate to freight system capacity, shippers and carriers must find new ways to navigate through urban areas and deliver goods on time and at a low cost.(6)

Shaping the Future of Transportation With CDA

- Strengthening infrastructure capabilities.
- Developing platforms for collaborative CDA research.
- Advancing the safety, efficiency, and sustainability of an entire connected transportation system.

All photos source: FHWA.

Roadmap to Achieve Goals



Source: FHWA

GOALS

SAFETY

- VRUs.
- Work zone, road weather, traffic incident management.
- Emergency response.
- Cybersecurity.

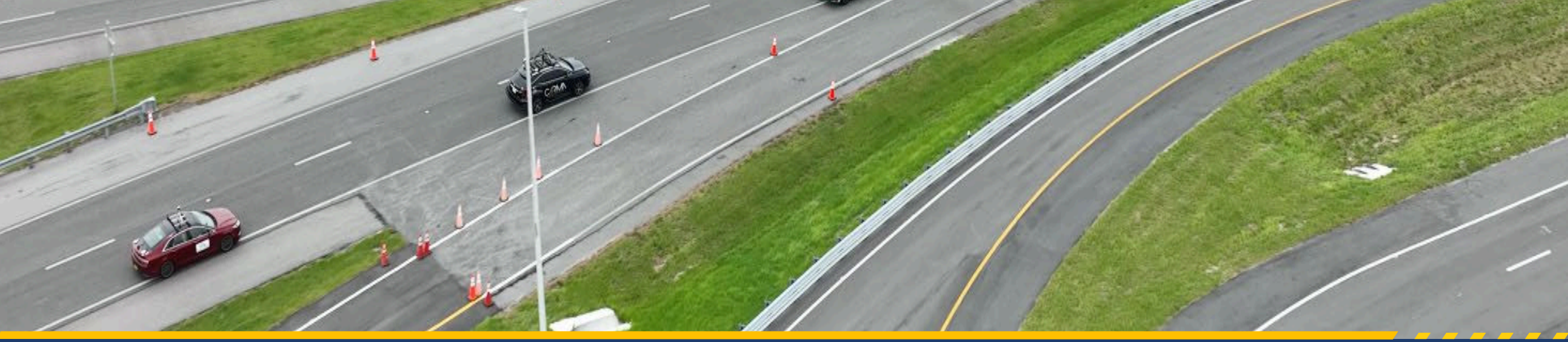
MOBILITY AND CLIMATE

- ADAS L1/L2 implementation.[7]
- Traffic management.
- Freight (FCMSA and MARAD).[8,9]
- Transit (Federal Transit Administration).[10]
- Energy and emissions.

EQUITY

- OSS tools and workforce development.
- Stakeholder engagement.
- Tech transfer and codevelopment.
- Standards development support.

ADAS = advanced driver assistance systems; FCSMA = Federal Motor Carrier Safety Administration; L1 = level 1; L2 = level 2; MARAD = Maritime Administration; OSS = open-source software; VRUs = vulnerable road users.



Source: FHWA.

Research Tools for You

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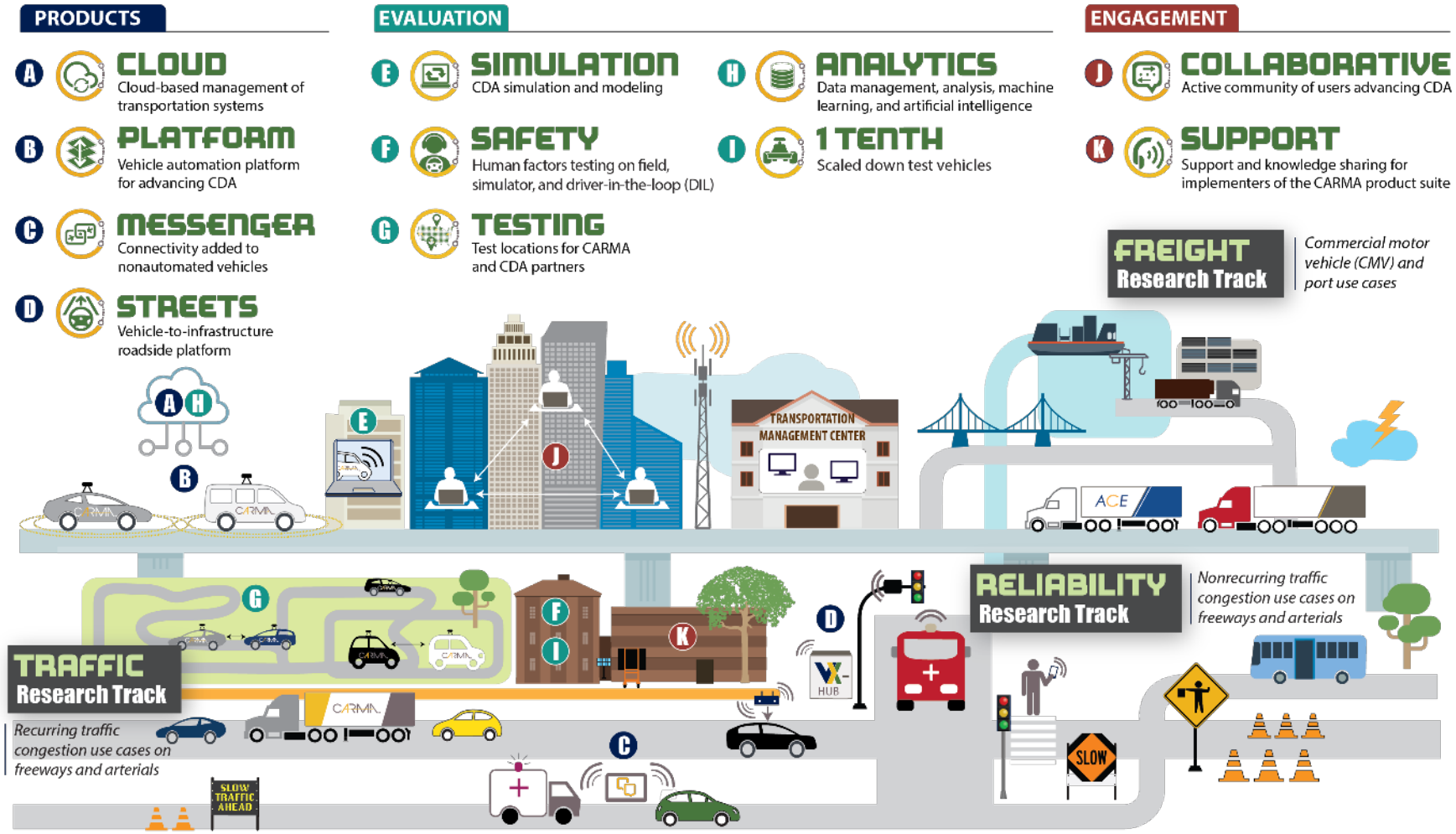
The Ecosystem of CDA Tools

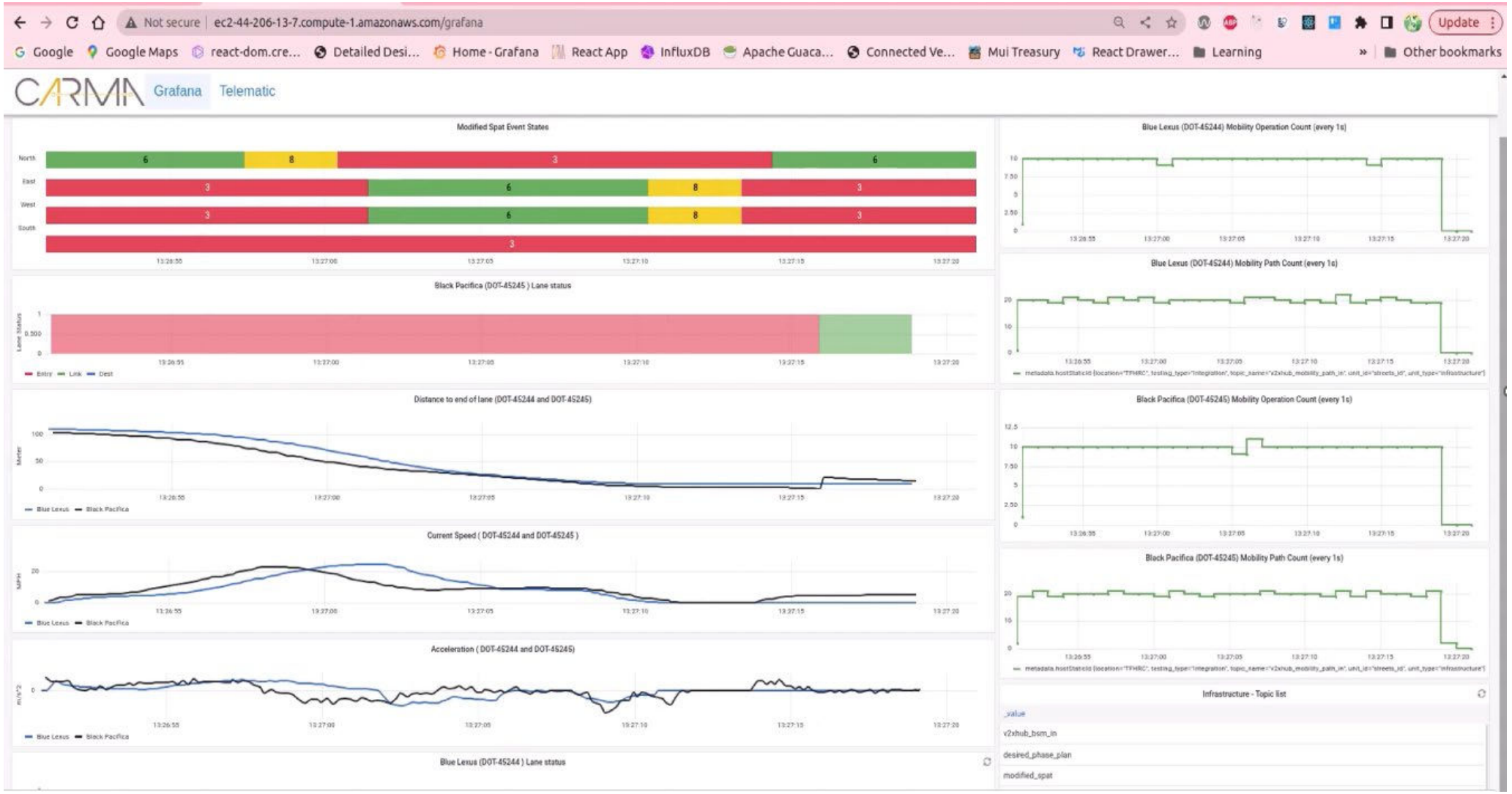


Source: FHWA.[11–19]

Connected and Automated Vehicle (CAV) Telematics Tool (1/2)[20]

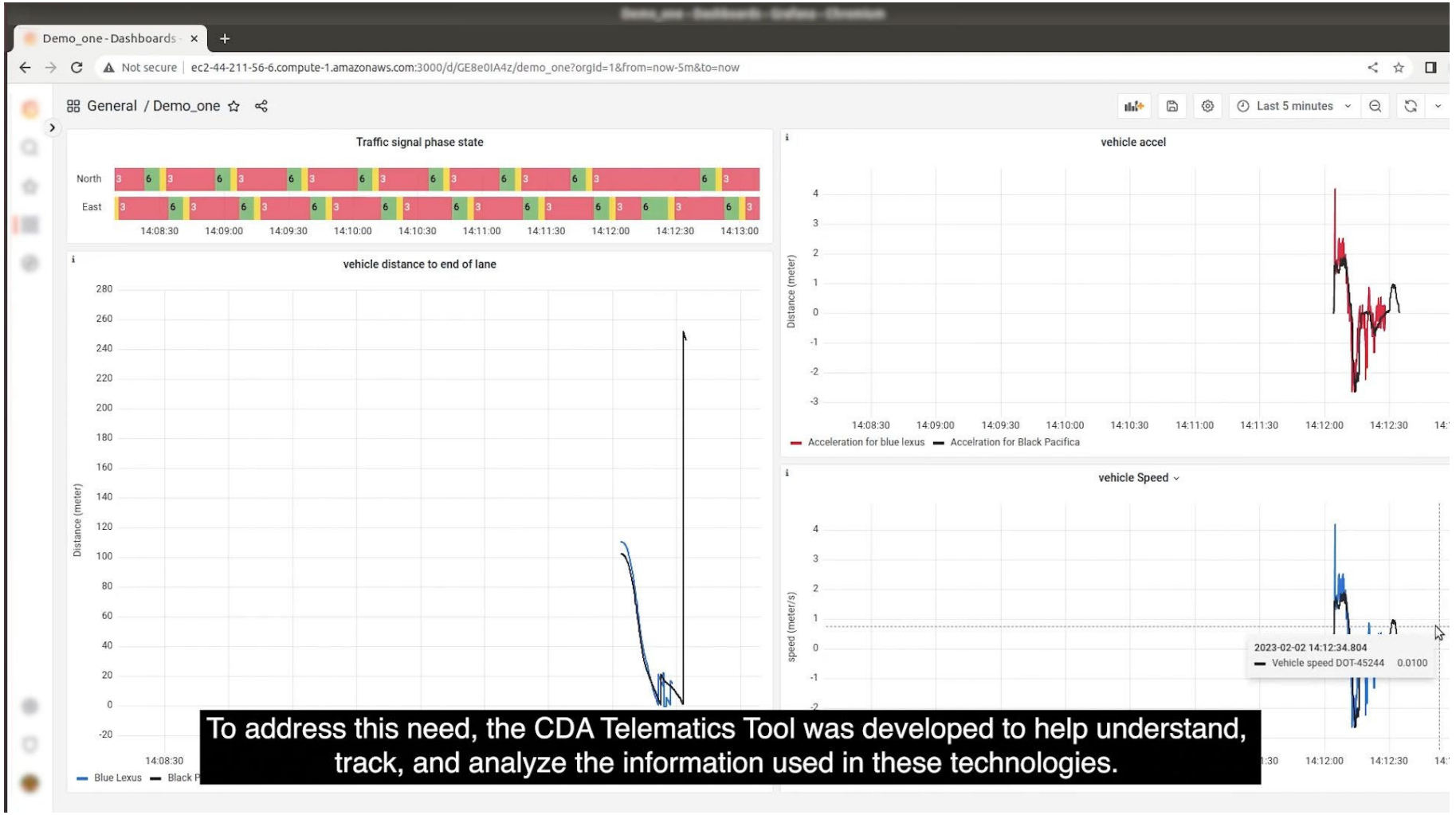
- Goal: This open-source, Web-based tool was designed to monitor CAV systems and rapidly *analyze* the generated data *in realtime*.
- The tool can collect and stream the data wirelessly and remotely from CAV research vehicles and infrastructure.
- The tool can integrate with other existing technologies such as the Vehicle-to-Everything Hub (V2XHub) and the CDA Cosimulation (CDASim) tool.[15,21]

CAV Telematics Tool (2/2)[20]

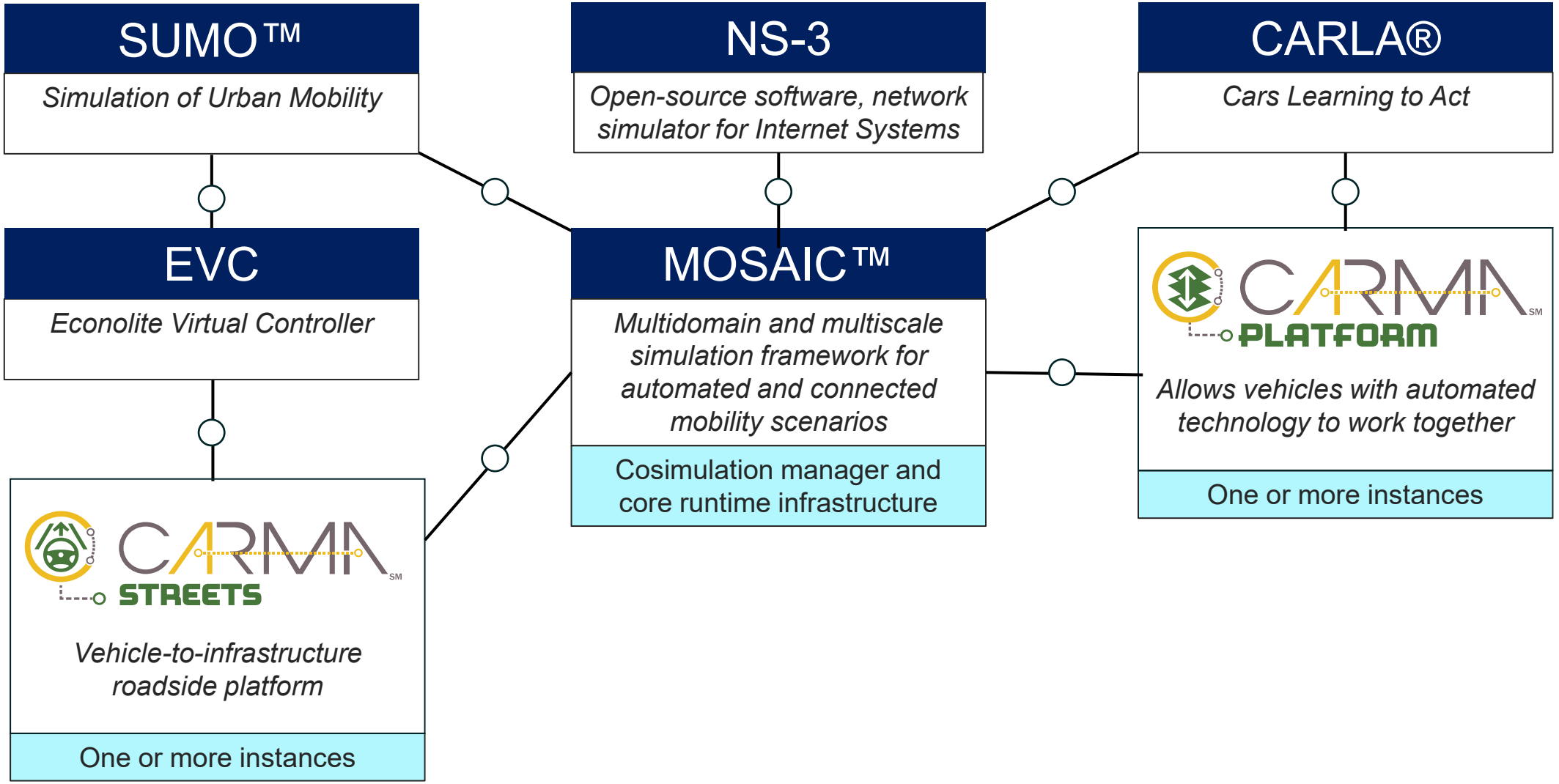


Source: FHWA

CDA Telematics Tool Video



CDASim Tool (1/2)[15]



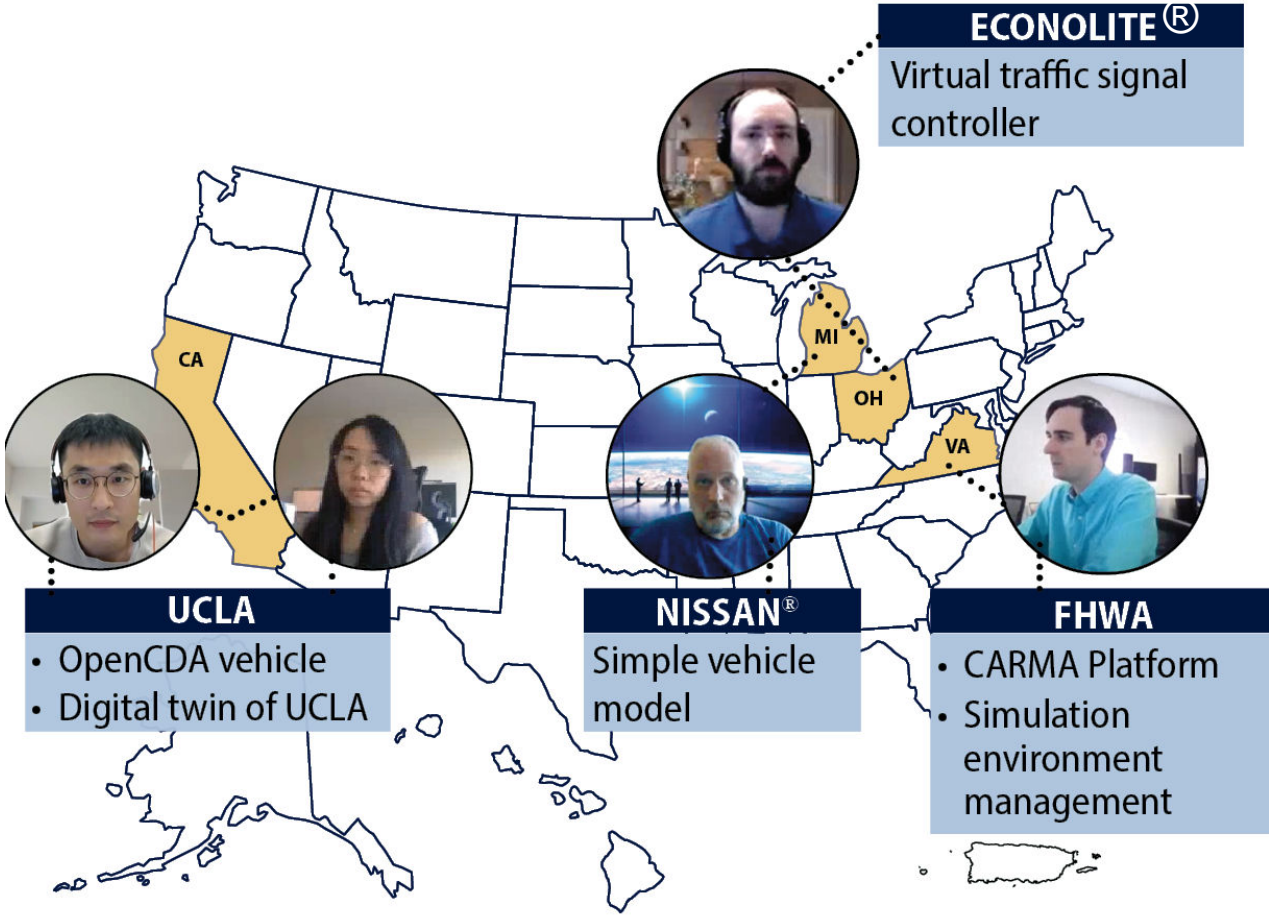
Source: FHWA.[12, 14, 22–25]

EVC = Econolite Virtual Controller

CDASim Tool (2/2)[15]

CAV Interoperability Test Tool (1/2)

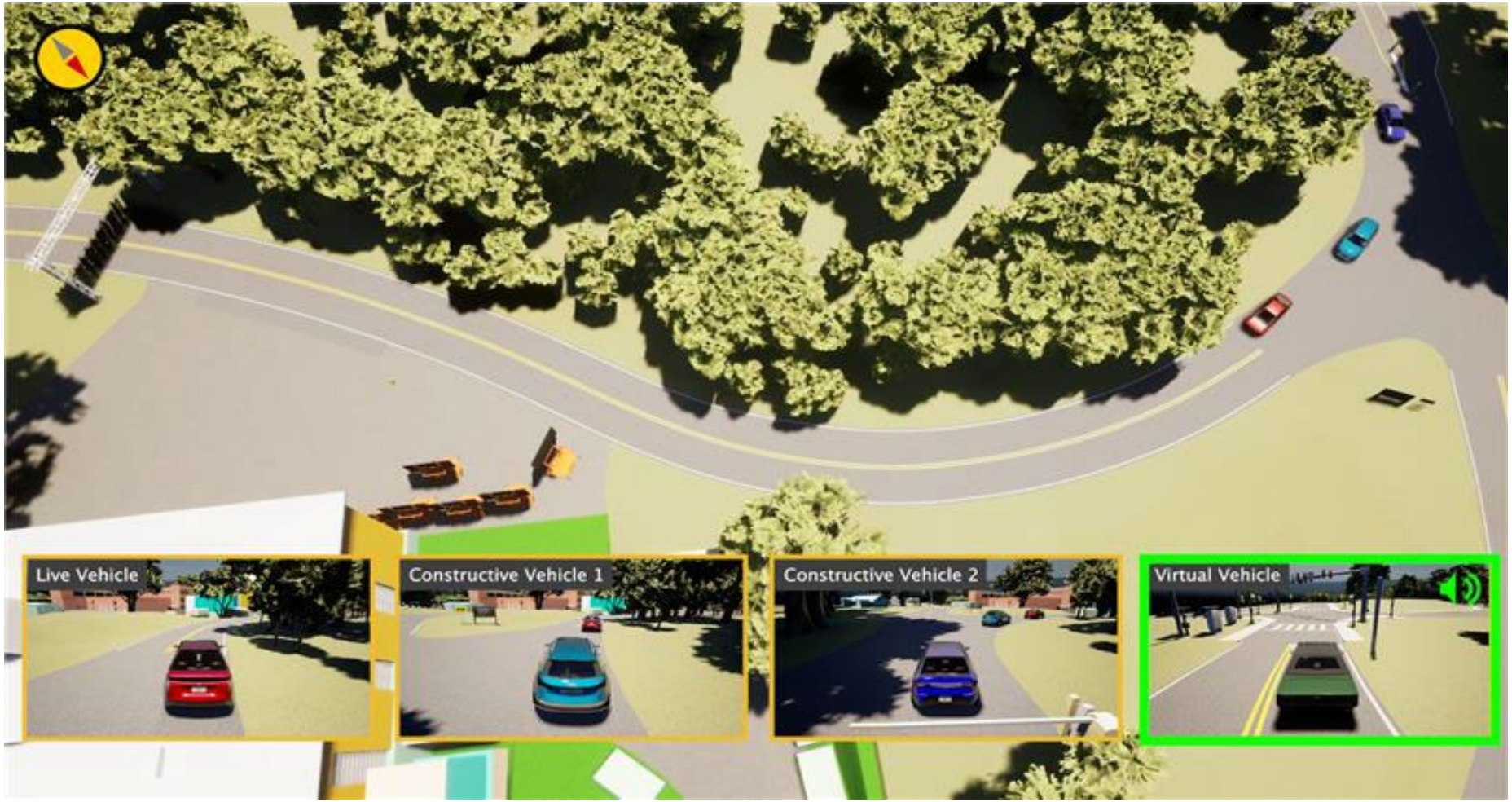
- A distributed research environment was used for testing the interoperability of surface transportation technologies.
- The first pilot test (spring 2023) established a cloud-based VPN (virtual private network) between four sites, and a simulated test was conducted using diverse models.



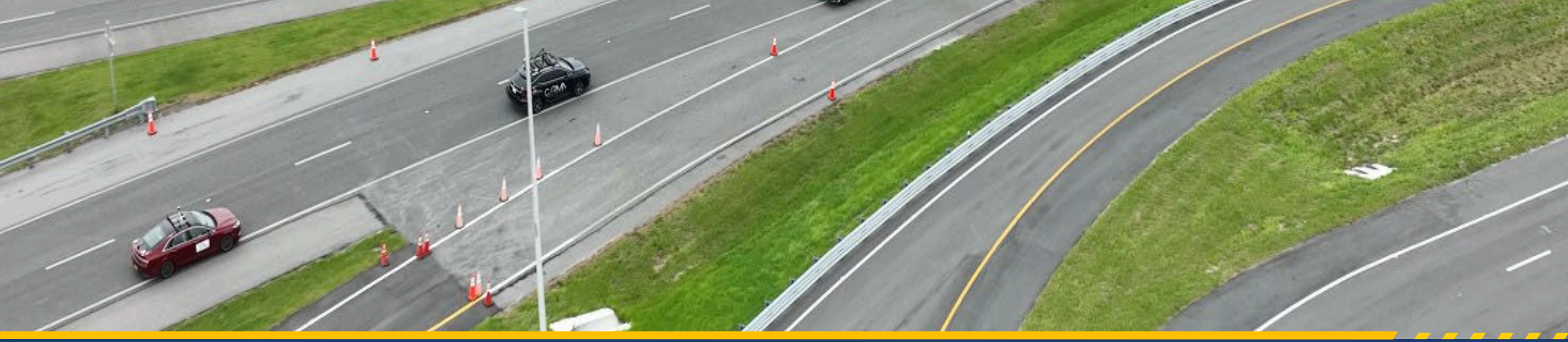
Source: FHWA.[12, 26–28]

UCLA = University of California, Los Angeles.

CAV Interoperability Test Tool (2/2)



Source: FHWA[17]



Source: FHWA.

CDA in Action!

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Academic Stakeholders Researching CDA

- Virginia Tech.
- UCLA.
- Ohio State University.
- University of Cincinnati.
- University of California, Riverside.

Source: FHWA.

Industry Stakeholders Integrating CAV Tools

- Intel® Corporation.
- Econolite.
- ConnectedWise.
- ThruGreen.™
- Traffic Technology Services.
- Volkswagen Group.®
- Nissan Motors.

Source: FHWA.

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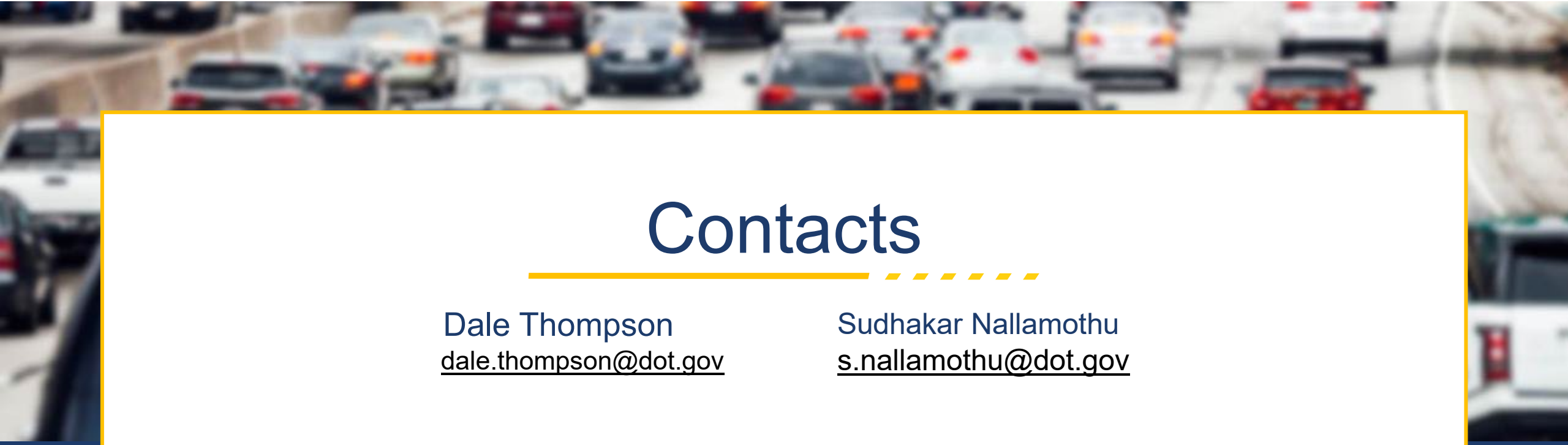

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Get Involved

- Join our technical working groups: carmasupport@dot.gov.
- Attend our upcoming events.
- Be a part of our open-source community: https://cdaprogram.org/.

Source: FHWA.

FHWA's Open-Source Community on Confluence.