



Source: FHWA.

Virtual  
Workshop  
Series

# Workforce Development





# Housekeeping

If you have a question, please type it in the chat pod. There will be various points in the presentation when we will address comments and questions.

This presentation will be recorded. The recording will be available after the entire series is completed. If interested in a copy, please reach out to:

[CAVSupportServices@dot.gov](mailto:CAVSupportServices@dot.gov)



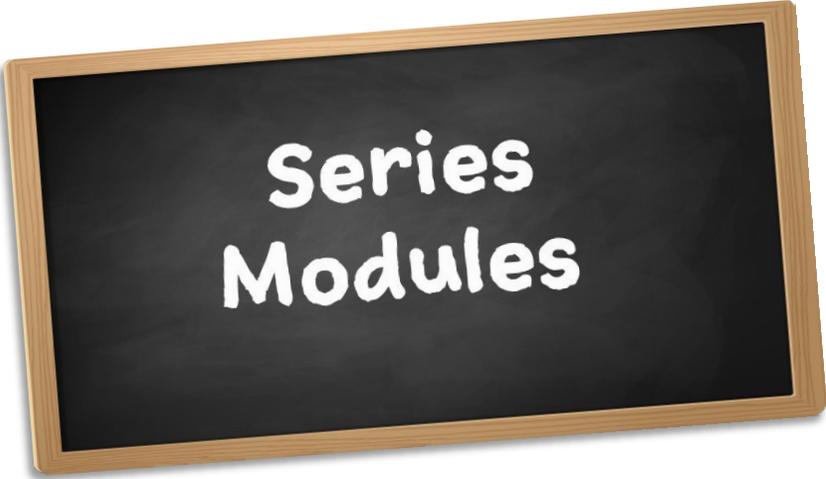


# Objective

*This workshop, consisting of a series of modules, will provide a virtual tour of Turner-Fairbank Highway Research Center (TFHRC), and a brief overview of the CAVe-in-a-box bench test system and its related components.*

- Learn about intelligent transportation system (ITS) research conducted at Turner-Fairbank.
- Improve knowledge of CAVe-in-a-box.
- Help shape Federal training for further enhancement.
- Learn about best practices and real-world applications.
- One-on-one training on different components.





# Series Modules

## Module 1 Agenda:

- Introductions from the Team.
- TFHRC Virtual Tour.
- Connected and Automated Vehicle (CAV) Support Services Equipment Loan Program.
- Questions/Comments.

## Next in the series:

2. Vehicle-to-everything (V2X Hub).
3. CAVe-in-a-Box, System Design, and Data Flows.



# hello!



**Deborah Curtis** is a research transportation specialist at the Federal Highway Administration (FHWA). She has more than 29 years of experience leading projects related to traffic signal systems, ITS, and, most recently, cooperative automation.

She has a bachelor's degree in civil engineering from West Virginia University.



Source: FHWA.

*Deborah*





# hello!



**Chris Stanley** is the program manager with Leidos, for the U.S. Department of Transportation (USDOT) FHWA's national CAV research laboratory, the Saxton Transportation Operations Laboratory (Saxton Laboratory). He is an innovative leader that has leveraged over 22 years in engineering, transportation, and connected vehicles to advance research, development, evaluation, and deployment of new technologies in the transportation industry. He is part of accelerating the development of new technologies in transportation management, analysis, and vehicle control.

He has a bachelor's degree in civil engineering from Oregon State University.

Source: FHWA

*Chris*



# hello!



**Dr. Mafruhatul (Medha) Jannat** serves as the project manager (PM) for the efforts to develop workforce training tools. As a senior transportation engineer at Leidos, she has served as the principal investigator (PI) and PM for several Federally funded projects at FHWA. She also served as the lab manager of USDOT FHWA's Saxton Laboratory for more than 3 years. With 9 years of experience in transportation engineering and behavioral research, her technical expertise focuses on ITS, vulnerable road users, human factors, and transportation operations.

She completed her PhD in civil engineering from Oregon State University.



*Medha*

Source: FHWA.





# hello!



As a V2X engineer, **Dr. Anjan Rayamajhi** has worked on several CAV projects, providing technical expertise in wireless communications, networking, and CAV application development at Turner-Fairbank. With more than 6 years of experience in wireless networks for CAVs, messaging infrastructures for distributed vehicular systems, and performance analysis in platooning and safety applications for CAV systems, Dr. Rayamajhi has brought fundamental systems knowledge to the projects and provides expert support for benchmark research in wireless communication for vehicular networks. He serves as the PI for the development of workforce training tools, designing the required testing and educational tool kits.

He completed his PhD in electrical engineering from Clemson University, during which he published peer-reviewed research papers in multiple journals and conferences, and he continues to do the same as a researcher at Turner-Fairbank.

Source: FHWA

*Anjan*



# hello!



As an electrical engineer at Leidos, **Animesh Balse** has worked on various research projects, including the study of wireless communications in CAVs, as well as open-source software development projects, like V2X Hub. Mr. Balse has expertise in technical support for connected vehicle deployments, thus contributing technical content for the workforce development project.

He completed his master's degree in automotive engineering from Wayne State University where he researched hardware-in-the-loop (HIL) simulations for power electronics components and wireless communications.



Source: FHWA

*Animesh*





# hello!



Source: FHWA

*Jeffrey*

As an research and development (R&D) engineering technician for Leidos, **Jeffrey Heger** is responsible for building such ideas as the CAVe-in-a-box into a tangible device for prototyping and proof-of-concept testing. He is highly experienced in mechanical and electrical technologies, with a proven background of hands-on technical experience.

He received a bachelor's degree in applied engineering and technology management, as well as a master's degree in technology and innovation from Millersville University.



# hello!



As a CAV industry liaison for Leidos, **Katie Blizzard** develops stakeholder and industry engagement in the CAV research and resources developed here at USDOT FHWA's Saxton Laboratory. She works to connect our work to researchers, educators, and agencies that can use it to accelerate their own work and can collaborate with us to advance the field.

She completed her master's degree in city planning at MIT, and since then has been working in transportation operations as a planner, researcher, and liaison focused on emerging technologies.



*Katie*

Source: FHWA





# hello!



Source: FHWA

*Thomas*

As a communications specialist, **Thomas Bayhi** uses a combination of outreach skills and technical understanding to deliver comprehensive CAV training materials to a variety of stakeholder audiences. With years of experience working as an outreach coordinator, public relations executive, educator, and communications specialist, Mr. Bayhi is well-versed in using his expertise to disambiguate highly technical information, particularly for education applications. He leads outreach efforts for the Development of Workforce Education Materials and Equipment project and is a key thought leader for the direction of the project.

He completed his bachelor's degree in public relations from Fresno State University, during which he oversaw several student-led outreach campaigns on technical and education-based projects.



# hello!



As a communications specialist at Leidos, **Corrina Graham** has created several multimedia resources for many Federally funded projects at USDOT FHWA's Saxton Laboratory. She is highly experienced in multimedia production and stakeholder outreach. She works as the videographer for the training videos and is an editor for our documents and presentations.

She completed her bachelor's degree in digital media, arts, and technology at Penn State. Her technical writing and photography work has been published in Public Roads.



Source: FHWA

*Corrina*





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# Turner-Fairbank Virtual Tour

Let's explore the ITS we have at Turner-Fairbank!





Feel free to unmute yourself or type any questions  
in the chat pod.



**Contact Us!** 

[CAVSupportServices@dot.gov](mailto:CAVSupportServices@dot.gov)





Thanks!

## Disclaimer

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# Equipment Loan Program Overview



# No-Cost Equipment Loans



Equipment available for loan enables development and testing of:

- Onboard equipment for connected vehicles.
- Roadside equipment and controllers for infrastructure.
- Network equipment for device interconnection.

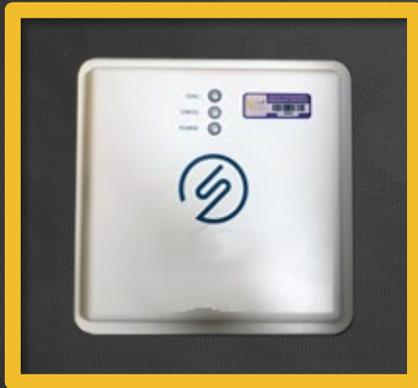


# Onboard Equipment for Connected Vehicles



## Onboard Units

- Available from a variety of vendors.



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## Bench Test Devices



Source: FHWA

## Tablets/Computers



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# Roadside Equipment for Infrastructure



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## Roadside Units

- Available from a variety of vendors.



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## Infrastructure Devices

- Vehicle-to-Everything (V2X) Hub Computers.
- Traffic Signal Controllers.



# Networking Equipment



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## Network Switches



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## Access Devices

- Hot spots.
- Power over Ethernet injectors.





**Coming Soon!**

When our lab reopens, we will be rolling out Connected-Vehicle-to-Everything (C-V2X) equipment loans.



Source: FHWA



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# Case Studies



## USDOT CV Pilots

How we support connected vehicle (CV) pilots:

- Host devices on-site and maintain latest firmware versions.
- Provide testing support.
- Share projects for feedback.
- Investigate problems and provide technical solutions.

## University of Maryland

How we support Maryland:

- Loan devices.
- Provide device implementation recommendations.
- Provide overview of intelligent transportation system (ITS) design.

## You!

How we can support you:

- Loan devices for testing.
- 1-on-1 guided device configuration training.
- ITS design documentation.
- Equipment procurement recommendations.





How do I  
request a  
loan?





1.

Email **CAVSupportServices@dot.gov**  
or visit: **[https://www.pcb.its.dot.gov/CV\\_deployer\\_resources.aspx](https://www.pcb.its.dot.gov/CV_deployer_resources.aspx)**

2.

Sign loan agreement.

3.

We ship it to you.

4.

Return after 30 days or renew.





Feel free to unmute yourself or  
type any questions into the chat pod.



**Contact Us!** 

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Thanks!

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