USDOT's 3rd V2X Summit:

Saving Lives with Connectivity

Thursday, October 26, 2023

U.S. Department of Transportation

Cover photos courtesy of iStock

3rd V2X Summit

Agenda

9:00 AM – 9:05 AM	Welcome
9:05 AM – 9:15 AM	Video Remarks from Hon. Secretary Buttigieg
9:15 AM – 10:00 AM	How DOT Supports Accelerating V2X Deployment
10:00 AM – 11:00 AM	V2X National Deployment Plan
11:00 AM – 12:00 PM	Industry Reactions to Draft Deployment Plan
12:00 PM – 1:00 PM	Lunch – Provided
1:00 PM – 2:00 PM	Public Agency Deployer Reactions to Draft Deployment Plan
2:00 PM – 3:15 PM	Workshopping the Plan
3:15 PM – 3:45 PM	Participant Q&A
3:45 PM – 4:15 PM	Forward Looking with CAT Coalition
4:15 PM – 4:30 PM	DOT Final Thoughts and Next Steps

U.S. Department of Transportation

3rd V2X Summit

Welcome

The Honorable Pete Buttigieg

United States Secretary of Transportation

U.S. Department of Transportation

3rd V2X Summit

Welcome

U.S. Representative Debbie Dingell

D-MI 6th District

U.S. Department of Transportation

How USDOT Supports Accelerating V2X Deployment

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3rd V2X Summit

How USDOT Supports Accelerating V2X Deployment

Fireside Chat with FHWA, NHTSA & Office of the Secretary

U.S. Department of Transportation

Shailen Bhatt
Administrator, FHWA

Ann Carlson
Acting Administrator, NHTSA

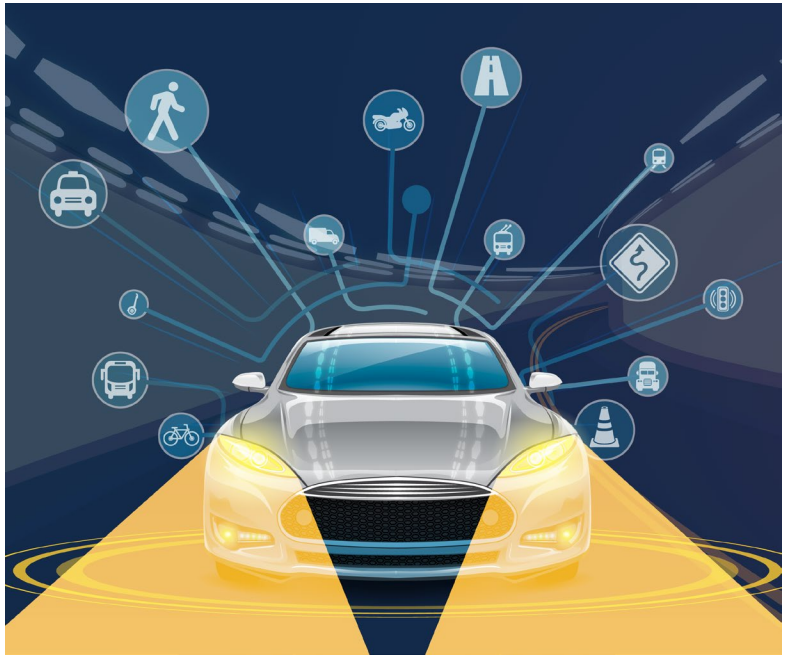
Dr. Robert Hampshire
Deputy Assistant Secretary for Research & Technology, US DOT / OST-R

MODERATOR

Lynda Tran
Director of Public Engagement, USDOT

Saving Lives with Connectivity: Accelerating V2X Deployment Notice of Funding Opportunity

- USDOT awarding a total of up to $40 million to up to 2 awardees to scale V2X tech.
- Goals:
  - Deploy, operate, and showcase integrated, advanced interoperable deployments.
  - Inform and educate the ITS community and the general public regarding these impacts.
  - Support the development, evaluation, and documentation of a suitable reference implementation.



Source: U.S. DOT

Draft V2X Deployment Plan

U.S. Department of Transportation

Photos courtesy of iStock

View the Plan & Share your Feedback

Draft V2X Deployment Plan

https://its.dot.gov/research_areas/emerging _tech/pdf/Accelerate_V2X_Deployment.pdf

For feedback, visit

https://tinyurl.com/V2X2023

Questions to Consider

- *What is your reaction to the plan?*
- *What do you like about it?*
- *What is missing or what would you change?*
- *What resources do you feel are needed to help scale and deploy V2X technology?*
- *What is one action you'd like to see coming out of this summit and completed in the next 3 months?*
- *What would you like to see in the short term (next 2-3 years) from other stakeholders, including from the DOT or from the public/private sectors?*

Quest for Vision Zero

- USDOT's National Roadway Safety Strategy's (NRSS) Safe System Approach is committed to reducing traffic-related deaths and injuries.
- Connectivity between and among vehicles, infrastructure, and other road users (V2X) is critical for achieving Vision Zero.

Source: U.S. DOT

Notable USDOT Actions

- Demonstrating Federal Leadership.
- Resolving Regulatory Uncertainty.
- Providing Technical Assistance and Resources to V2X Deployers.
- Convening Stakeholders and Sharing Best Practices.
- Identifying Tested Day-One V2X Applications.
- Investing Federal Funds in V2X.

Vision and Mission

VISION

Enable a safe, efficient, equitable, and sustainable transportation system through the national, widespread deployment of interoperable V2X technologies.

MISSION

Deploy interoperable V2X connectivity using the dedicated 5.9 GHz spectrum and other available spectrum through collaboration and coordination across federal government, the public sector, and private industry.

Scope, Goals and Targets

V2X Deployment Plan Scope

- Plan goals:
  - Defines USDOT's vision, mission and goals for V2X deployment
  - Identifies short, mid-term and long-term key milestones and targets for deployment for private sector and public agencies
  - States specific actions needed across stakeholder groups
  - Summarize resources and assistance available
  - Reduce uncertainty
- Plan does **NOT** provide technical, how-to information to deploy V2X. A separate *V2X Deployer Resources* document is planned for early 2024.

Short-Term (2024 – 2026): *Leading Deployers in Operation*

Infrastructure Deployments

- V2X deployed on 20% of National Highway System.
- Top 75 metro areas have 25% of signalized intersections V2X enabled.
- 12 interoperable, cybersecure deployments.
- 20 grants to 10 states for 5.9 GHz band use.

Vehicles

- 2 Original Equipment Manufacturers (OEMs) commit to 5.9 GHz capable vehicles by 2027 model year.

Spectrum and Interoperability

- 2 SCMS providers demonstrate interoperable security credentials management.
- 3 device suppliers and 2+ OEMs demonstrate interoperability.
- FCC completes 2nd Report and Order on 5.9 GHz band.

Benefits and Technical Assistance

- 3 case studies on deployed V2X benefits/costs.
- 25 active Accelerating V2X Cohort members.
- 10 regional hands-on training events.

Source: U.S. DOT

Medium-Term (2027 – 2029): *V2X Deployer Community Growth*

Infrastructure Deployments

- V2X deployed on 50% of National Highway System.
- Top 75 metro areas have 50% of signalized intersections V2X enabled.
- 25 interoperable, cybersecure deployments.
- V2X installed in 40% of the nation's intersections.

Vehicles

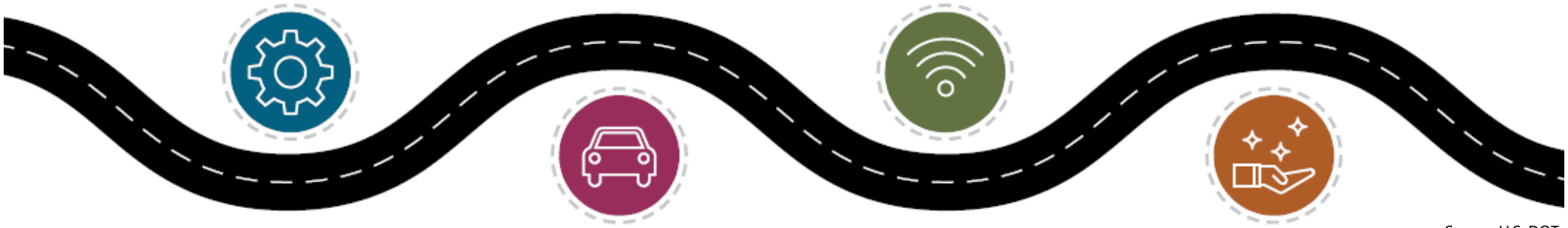
- 5 vehicle models are 5.9 GHz capable.
- 3 active deployments generate Infrastructure Owner-Operator (IOO) data used by 2 OEM production vehicles.
- 4 suppliers, 3 OEMs demonstrate interoperable connectivity.

Spectrum and Interoperability

- 5 V2X use cases demonstrated in the 5.9 GHz band.
- 5 V2X use cases demonstrated beyond the 5.9 GHz band.
- 20 public agencies demonstrate interoperability.
- 2 providers utilize interoperable SCMS credentials.
- 10 certified devices on the market.

Benefits and Technical Assistance

- 6 use cases (2 involving vulnerable road users) document V2X safety benefits.
- 50 active Accelerating V2X Cohort members author progress report.



Source: U.S. DOT

Long-Term (2030 – 2034):
Nationwide Interoperable V2X Deployed

Infrastructure Deployments

- V2X fully deployed on National Highway System.
- Top 75 metro areas have 85% of signalized intersections V2X enabled.
- 50 interoperable, cybersecure deployments.
- Interoperable 5.9 GHz operations across 50 states.
- V2X installed in 75% of the nation's intersections.

Vehicles

- 6 OEMs have 5.9 GHz capable production vehicles for safety use cases.
- 20 vehicle models are V2X capable.

Spectrum and Interoperability

- 5 V2X use cases operational in the 5.9 GHz band in all 50 states.
- 5 V2X use cases operational beyond the 5.9 GHz band in 5 states.
- 20 certified devices dominate deployed V2X technology base.

Benefits and Technical Assistance

- 10 deployments in operation for 5 years streaming benefits/cost data.
- 75 active Accelerating V2X Cohort members sponsor pooled fund projects.

Source: U.S. DOT

Key Focus Areas Enabling Interoperable V2X Deployment (1 of 3)

- **Systems Engineering Processes**
  - Must be followed to manage risks, ensure the right system is being developed, and to ensure interoperability.
- **Wireless Technologies**
  - Utilizing current licensed (5.9 GHz, cellular, satellite) and unlicensed (WiFi) spectrum and staying afloat of future advancements.
- **Standards & Architecture**
  - Protocols for transmitting and processing messages needs to be defined clearly and with documented specifications.

Key Focus Areas Enabling Interoperable V2X Deployment (2 of 3)

- **Cybersecurity**
  - Agencies must maintain a cybersecurity profile that enables planned interoperable connectivity deployment.
- **Trust & Credential Management**
  - A Security Credential Management System is needed to authenticate and sign messages to establish trust.
- **V2X Certification**
  - Devices must be tested to ensure conformance to key industry standards, requirements, and functionality.

Key Focus Areas Enabling Interoperable V2X Deployment (3 of 3)

- **Policies**
  - Evolving policies impacting the interoperable connectivity ecosystem include standards, spectrum, security, privacy, data governance, etc.
- **Spectrum Governance**
  - Beyond the licensed ITS band, additional spectrum for interoperable connectivity may include a variety of options which are governed differently.
- **Outcome / Benefit Framework**
  - The network effect and the technology adoption life cycle are critical factors for advantageous benefit/cost ratios.

V2X Community Stakeholders

Stakeholder Involvement

Achieving a national, interoperable transportation system requires *collective action* from both public and private sectors.

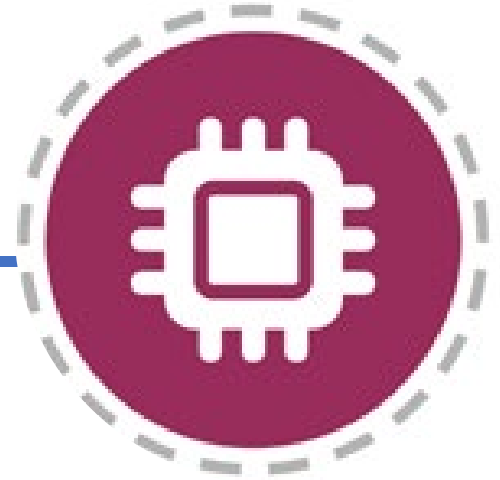
Source: U.S. DOT

U.S. Department of Transportation

Federal Agencies' Potential Actions

- **USDOT**
  - Provide leadership and seed funding; facilitate community interaction; provide support for standards, architecture and testing.
- **Federal Communications Commission (FCC)**
  - Determine rules for use of 5.9 GHz 30 MHz spectrum allocation to transportation.
- **National Telecommunications and Information Administration (NTIA)**
  - Coordinate and convey federal (USDOT) interests in spectrum decisions and rules to FCC.

Automotive Industry Potential Actions



- **OEMs**
  - Develop, test, and deploy interoperable V2X technologies and safety applications.
- **Automotive Suppliers**
  - Develop vehicle components and applications; support precompetitive R&D and standardization; identify message sets and standards for interoperability.

Support Services' Potential Actions

- **App Developers.** Design and develop apps.
- **Service Providers.** Develop and operate supporting services that enable interoperable connectivity applications.
- **ITS Equipment/Software Vendors.** Develop infrastructure-based components and software.
- **Design/integration/deployment consultants.** Provide support for public agencies to design, procure, integrate, and deploy solutions.
- **Communications Providers.** Deploy and operate private communications networks.
- **Security Credential Providers.** Provide security credential-related services.

Professional Organization and Association Potential Actions

- **Trade Associations**
  - Provide industry stakeholder feedback to inform USDOT and provide expertise.
- **Test Certification Providers**
  - Provide testing and certification services for V2X devices.
- **Standards Development Organizations**
  - Develop standards for interoperability and support cooperative applications.

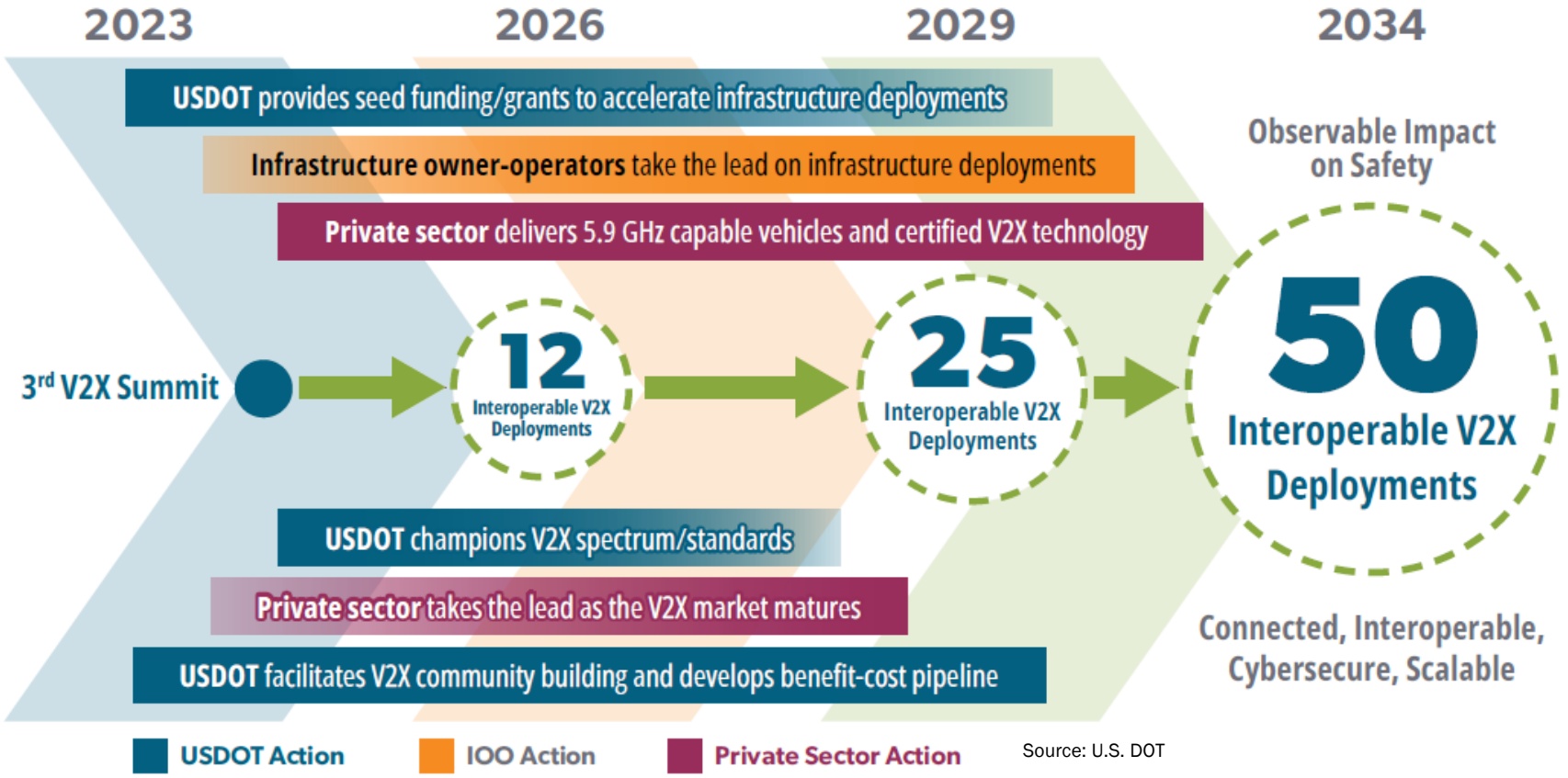
Deploying Agencies' Potential Actions

- **Transit Operators**
  - Deploy and operate on-board and center-based V2X applications.
- **Freight Operators**
  - Deploy and operate on-board and center-based V2X applications.
- **States, Local Governments, Tribes, and Public Agencies**
  - Deploy and operate interoperable, cybersecure infrastructure-based V2X technologies and applications.

USDOT-Sponsored Activities and Resources

Technical	Stakeholder Engagement	Professional Capacity Building
V2X Mapping Tool	V2X Summits	Smart Community Resource Center
Open Source Connected Vehicle Tools	Support of Working Groups, including Connected Vehicle Pooled Fund Study	Equipment Loan Program and Help Desk
ITS Standards and Architecture	Coordination with USDOT modal administrations and federal agencies	Training and Supporting Materials
USDOT Spectrum Team	Coordination with Deployers and NTIA/FCC	Early Deployer Cohort Program
V2X Deployer Resources *(anticipated early 2024)*	Engagements with Key Industry Associations	Documented Best Practices

Creating Momentum Through Coordinated Stakeholder Actions



Source: U.S. DOT

Let Us Know Your Thoughts

1. *What is your reaction to the plan?*
2. *What do you like about it?*
3. *What is missing or what would you change?*
4. *What resources do you feel are needed to help scale and deploy V2X technology?*
5. *What is one action you'd like to see coming out of this summit and completed in the next 3 months?*
6. *What would you like to see in the short term (next 2-3 years) from other stakeholders, including from the DOT or from the public/private sectors?*

Prepare to share your thoughts during this afternoon's breakout sessions.

Have ideas or want to provide feedback?

Email:

V2XDeploymentPlan@dot.gov

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Industry Reaction to Draft Deployment Plan

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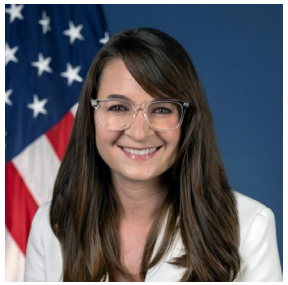
Photos courtesy of iStock

Industry Panelists

MODERATOR:
Kristin White, FHWA



Hilary Cain
Vice President,
Alliance For Automotive Innovation

Robert Gee
Connected Car Networking Business Unit,
Continental

Angela Fessler
Director of Engineering,
Valtech Mobility

Brock Aun
VP of Communications & Public Policy,
Haas Alert

Laszlo Virag
Executive President and Chief Technology Officer / Founder,
Commsignia

Lunch

Reconvene at 1:00 PM ET

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Public Agency Deployer Reaction to Draft Deployment Plan

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Photos courtesy of iStock

Public Agency Panelists

MODERATOR:
Valerie Briggs, FHWA

Danielle Deneau
Road Commission
Oakland County,
Michigan

Elise Feldpausch
CV Specialist,
Michigan DOT

Blaine Leonard
Transportation
Technology Engineer,
Utah DOT

Debby Bezzina
Managing Director,
Center for Connected
and Automated
Transportation
UMTRI

Tracy Larkin-Thomason
Director,
Nevada DOT

Workshopping the Plan

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Photos courtesy of iStock

Instructions

- **Virtual attendees** will be split into 6 breakout rooms.
  - You will need to leave the IBM Live Platform and join the following Zoom link:
    https://itsa-org.zoom.us/j/2320556935?pwd=QVRzYUtkdGdCaFd2enZwYkJOMnh6Zz09

    Meeting ID: 232 055 6935
    Passcode: V2XSummit
  - The Zoom link will also be provided in the chat.
- **In-person attendees** will be split into 5 breakout groups (red, orange, yellow, green, blue).
  - The colored sticker on your agenda designates which breakout group you are assigned to.
- Each breakout room (in-person and virtual) will have a USDOT Facilitator.

Participant Q&A

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Photos courtesy of iStock

Moving Forward with the CAT Coalition

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Photos courtesy of iStock

CAT Coalition Panelists

MODERATOR:
Martin Knopp, FHWA

Jim Tymon
Executive Director,
AASHTO

Steve Kuciemba
Executive Director & CEO,
ITE

Laura Chace
President & CEO,
ITS America

Hilary Cain
Vice President,
Alliance For Automotive
Innovation

Closing Thoughts and Next Steps

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Photos courtesy of iStock

Stay Connected

For updates, please visit:

V2X Communications

Contact:

V2XDeploymentPlan@dot.gov