



Vehicle-to-Everything (V2X) Communications Summit:

Meeting Summary Highlights: Preparing for Connected Deployment Nationwide



Background

On August 24 and 25, 2022, the U.S. Department of Transportation (U.S. DOT) hosted the Vehicle-to-Everything (V2X) Communications Summit at U.S. DOT headquarters in Washington, DC, with over 600 in-person and virtual attendees. Discussions and presentations focused on charting a successful path forward for connected transportation environments, including automated vehicles and emerging digital infrastructure, within the dedicated 30 megahertz (MHz) of radio frequency spectrum in the 5.9 gigahertz (GHz) band.

Event Purpose

The purpose of the V2X Communications Summit was to convene a broad array of intelligent transportation system (ITS) community stakeholders to brief them on U.S. DOT's recent 4G Long-Term Evolution (LTE)-V2X testing. The summit aimed to advance the dialogue on the short- and long-term, high-priority actions necessary to move V2X deployment forward, given changes to the spectrum allocation, band plan, and approved technology.

Key Issues and Challenges to Use of the 30 MHz and V2X Deployment

The summit's presentations, panelist discussions, and breakout sessions brought several challenges to light. The following are highlights of some of the challenges discussed:

- **Regulatory Uncertainty:** Meeting participants emphasized that the Federal Communications Commission (FCC) “needs to finish the job” and approve pending waiver requests, establish a licensing system and technical and operational rules of service for LTE-V2X, and issue the Second Report and Order (R&O) so that the technical and operational rules for LTE-V2X may be understood.
- **Absence of Original Equipment Manufacturer (OEM) Deployment:** The lack of deployment by the OEMs was emphasized by many public sector attendees as a key hurdle to planning for future V2X investments.
- **Perceived Lack of Senior U.S. DOT Leadership Engagement:** Meeting participants urged the U.S. DOT to show more leadership in resolving the many conflicts and challenges that remain in enabling nationwide V2X deployment, including issuing a public statement that “V2X is a Departmental priority.”
- **Absence of a Suite of Proven Day-One Applications:** Participants noted that testing needs to be done to establish a set of core priority safety messages proven to work with the LTE-V2X technology and effective and safe for use within the 30 MHz.
- **Interference Risks from Unlicensed Users in Adjacent Channels:** Any potential risk of harmful interference from unlicensed users in adjacent channels must be thoroughly examined and tested, as these results will form a key part of the FCC's Second R&O rules.
- **Misaligned Adoption Lifecycle between Telecommunications Technologies and Transportation Technologies:** Participants noted that the lifecycle for a new technology to be incorporated into U.S. production vehicles takes over 5 years and tends to last 17 years on average. Infrastructure owners and operators (IOOs) noted the same issue with their capital planning and investment timeframes. However, new telecommunications technologies emerge every three years with each next generation of a telecommunication technology emerging approximately every decade. If communications technologies are not backward compatible, this creates significant investment and operations risks for transportation investments and operations.
- **Gaps in Supporting Technologies:** Gaps remain in supporting technologies such as the Security Credential Management System (SCMS) and other core elements. In addition, it is important to stakeholders to ensure that: certification test procedures and standards are comprehensive; and installation and validation tools and reference materials are available. Stakeholders discussed these gaps and turned to the U.S. DOT to identify how to facilitate completion of supporting technologies.

Next Steps

Based on the results from the summit, the following list of proposed, actionable, short- and long-term critical-path activities are presented for stakeholder comment. A [longer summary document](#) includes further details on these actions and identifies additional proposed actions that can form the foundation for a comprehensive plan. The comprehensive plan can foster a stable and inviting regulatory environment; establish V2X deployment targets and milestones; and facilitate deployment, research, and strategic preparedness.

Proposed Short-Term Priority Actions from Stakeholders (estimated at 0 to 6 months)

- **Have the U.S. DOT and National Telecommunications and Information Administration (NTIA) work with FCC to grant waivers and establish regular coordination discussions:**

Stakeholders desire that FCC allow them to move forward with V2X deployments by granting the waivers filed on the FCC docket. These waivers can help the stakeholder community advance the technologies and systems.

Further, a uniform, whole-of-government strategy is desired to foster greater trust and certainty, which will aid in advancing future adoption and acceptance of V2X and support “breaking the regulatory logjam.”

- **Complete examination and testing of Unlicensed National Information Infrastructure (UNII) interference:**

Final results are needed to ensure that the FCC Second R&O rules are protective of V2X in the 30 MHz.

- **Develop a National V2X Vision and Deployment Comprehensive Plan:**

Stakeholders want the U.S. DOT to work collaboratively with Departmental Operating Administrations and other Federal agencies; leaders within the V2X community from ITS America, the Alliance for Automotive Innovation, the American Association of State Highway Transportation Officials (AASHTO), the Institute of Transportation Engineers (ITE), the Cooperative Automated Transportation Coalition (CAT-C); OEMs—both vehicle and device vendors; academia; and others on developing a unified vision and path for achieving interoperable connectivity for the nation.

- **Further engage U.S. DOT political leadership on importance of V2X to the nation:**

Stakeholders requested that U.S. DOT leadership establish public commitments for V2X deployments, issue a public statement on the importance of V2X to road safety, and ensure that V2X is a “Departmental priority.”

- **Conduct a V2X Communications Summit 2.0:**

The U.S. DOT and partners will reconvene this group on a regular cadence to make progress on resolving issues and obtain input on actions.

- **Prioritize funding for V2X:**

During the summit, the U.S. DOT [presented on available options](#) including [grant funding](#) and formula funding.

Proposed Longer-Term Priority Actions from Stakeholders (estimated at 1 to 3 years)

- **Mature the SCMS—a key aspect of interoperability:**

Meeting participants pointed to the need for further evolution and maturing of the SCMS, including governance policies.

- **Establish a Day-One LTE-V2X Application Inventory:**

A major concern of IOOs was the lack of commercially available V2X applications that are proven to be effective at improving safety and work with LTE-V2X technologies.

- **Develop technical V2X installation guidance and education:**

Many IOOs need further guidance for technical staff on installation of devices.

- **Ensure that standards and test procedures are complete for LTE-V2X:**

Stakeholders requested the U.S. DOT ensure that these and test/validation tools are in place for successful deployment.

- **Identify V2X applications that can use non-dedicated spectrum to realize additional V2X benefits:**

Stakeholders were excited to learn about potential methods for V2X applications and services to work outside of the 30 MHz dedicated spectrum, but they require that testing and demonstration be provided.

- **Establish a public adoption campaign to communicate benefits to a broader set of decision-makers:**

As V2X deployments move forward, meeting participants urged the U.S. DOT to establish a public adoption campaign. This campaign would reinforce the message of safety for all road users. It could also create interest from users who might deploy more quickly than OEMs or IOOs (e.g., vehicle fleet owners).

Summary Conclusion

While all actions are important, the U.S. DOT, with industry partners, has identified two key, immediate critical-path actions:

- ➔ The U.S. DOT will seek to partner with FCC and NTIA to identify steps for granting pending waivers to permit deployment of LTE-V2X technology immediately and issuing the Second R&O on final licensing processes and technical and operational rules.
- ➔ The U.S. DOT will partner with OEMs, IOOs, V2X technology companies, ITS America, AASHTO, ITE, and others to develop a vision and comprehensive plan for interoperable, cyber-secure, connected deployments nationwide.