Meeting summary for CVPFS Annual Meeting - Day One - Winter 2024 (San Diego, CA) (12/03/2024)

Quick recap

The meeting focused on the Connected Vehicle Pooled Fund Study's upcoming activities, with updates from various organizations and discussions on ongoing projects. Key topics included the progress of the ITS Professional Capacity Building Program, interoperability testing for V2X technologies, and the development of procurement documentation for IT components and systems. The meeting also covered guidance for MAP preparation, Connected Work Zones, and the validation process for intersections to support autonomous vehicles, concluding with discussions on the importance of accurate lane positioning and the challenges of deploying RTCM corrections.

Next steps

- Frank Perry (WSP) and team to develop procurement documentation for V2X infrastructure components and related services.
- Dean Deeter (Athey Creek) and team to deliver 4th revision of MAP guidance document by June/July 2025. Dean and team to develop transition plan for moving from MAP messages to RGA messages.
- Blaine Leonard (UDOT) and team to continue developing and testing validation tools for SPAT and MAP messages. Blaine to distribute survey on RTCM requirements to meeting attendees.
- Justin Anderson (FHWA) to plan the next interoperability test event for early May 2025, focused on SPAT/MAP and signal priority/preemption.
- JD Schneeberger (JPO) to share standards taxonomy framework with Nick Hegemier (ODOT) when available. JD Schneeberger to develop more technical "201 level" V2X training course.
- Siva Narla (ITE) and team to publish first automated/connected work zone standard by end of year.
- Patrick Chan (SAE) and team to publish revised CTI 4501 standard documents in spring 2025.
- AASHTO team to finalize CAV policy priorities for upcoming reauthorization process.
- Caltrans team to continue RTCM deployment and testing.
- Utah DOT team to build more physical validation tools and share with other agencies.
- Florida DOT to continue transitioning to CAV 2.0 deployment approach.

Summary

Connected Vehicle Pooled Fund Study Overview

The meeting was led by Brian Smith (UVA), who introduced the agenda and the participants. Participants included:

Shafique Islam (Arizona DOT), Joseph Jones (Arizona DOT), Mallory Artusio (UVA), Brian Smith (UVA), Rob Tieman (UVA), Jagtar Dhaliwal (Caltrans), Balwinder Tarlok (Caltrans), Mona Attallah (Caltrans), Raj Khangura (Caltrans), Ben Glenn (Alaska DOT), Cam Morris (Tennessee DOT), Christine Shafik, Frank Perry (WSP), Chris Toth (WSP), Chuck Felice (Utah DOT), Blaine Leonard (Utah DOT), Anthony Ingrassia (Connecticut DOT), James Sekorski (Connecticut DOT), Dean Deeter (Athey Creek), Jeremy Schroeder (Athey Creek), Fahad Khan (Virginia DOT), Gene McHale (FHWA), Marisa Migliore (FHWA), John Hourdos (FHWA), Fred Heery (Florida DOT), Yamilet Diaz (Florida DOT), Gunnar Rhone (Pennsylvania DOT), Jacob Gasper (Minnesota DOT), Sunny Gill, Jay Parikh, Rich Deering, Mike Shulman, Justin Anderson (FHWA), JD Schneeberger (JPO), Jonathan Parent (Transport Canada), Kathy Asmussen (Virginia DOT), Melissa Clark (Caltrans), Mo Kim (GSU), Nathan Loebs (Caltrans), Nick Hegemier (Ohio DOT), Patrick Chan (SAE), Peter Thompson (SANDAG), Raj Sharma (Maryland DOT), Srinivasa Sunkari, Subhadipto Poddar, Supanpreet Kaur (Caltrans), Tomas Lindheimer (Texas DOT), Erika Kemp (Texas DOT), Tony English (Neara), David Karnes (Wisconsin DOT), Shreekant Marwadi (Leidos), Ryan Hall (OmniAir), Marisa Walker (ACA), Bobby McCurdy (ITS America), Siva Narla (ITE), Dmitri K, Emi Carbray (AASHTO), Govind Vadakpat (FHWA-JPO), Kevin Chan (Minnesota DOT), Joshua Meng (UC Berkley-PATH), Cory Johnson (Minnesota DOT), Hassan Valizadeh, Lisa Saldin, Omar Aboulaban (AECOM), Xiaoyang Jia (Tennessee DOT), Daniela Bremmer (Washington DOT), John Wiens (Neara), Linda Baker (Neara), Hassan Charara, Brian Romansky, Murray Egan, Steve VanSickle, Nathan Ruckert, Jianming Ma (Texas DOT), Ralph Boaz, Virginia Lingham (WSP), Rick Smith, Xiaoxiao Zhang (WSP), Gopi Surnilla (Valtech), Angela Fessler (Valtech), Matt Gilbertson (Panasonic), Brian Simi (Michael Baker), Alan Davis (Georgia DOT), Victoria Coulter (Georgia DOT), Richard Woo (Maryland DOT), Kody McCarthy (New Hampshire DOT), Alex Lemka (Maricopa County DOT)

The meeting then shifted to an introduction by Caltrans as the host agency, led by Jagtar Dhaliwal. Jagtar provided an overview of the projects and initiatives in California, including the bus on shoulder project and the wrong way detection pilot project.

CAV Agency Updates: (USDOT/JPO, SAE, ITS America, ITE, AASHTO, CAMP/OEM)

ITS Professional Capacity Building Program

John (JD) Schneberger from the ITS Joint Program Office discussed the progress and future plans of the ITS Professional Capacity Building Program. He highlighted the growth of the Accelerating V2X Cohort, which now includes 50 agencies, and the development of an interactive map to track V2X deployments across the country. John also mentioned the creation of a V2X Standards Taxonomy and a V2X Deployment Cost Guide to help agencies understand the costs involved in deploying V2X technologies. He also introduced the ITS Professional Capacity Building Program website, which serves as a resource hub for V2X information. Lastly, he discussed the development of a more advanced V2X training course, focusing on hands-on deployment and installation.

Discretionary Grant Funding Sources
Technical Primer on SSPs and PSIDs
Lessons Learned from the CV Pilots related to RSUs

Contact J.D. Schneeberger (john.schneeberger@dot.gov) if interested in:

1. Participating in the Accelerating V2X Cohort
2. Providing input of validating V2X Deployment Map data
3. Having USDOT deliver Foundational V2X Training
4. Providing resources for the Smart Community Resource Center (SCRC)

Interoperability Testing and V2X Policy Updates

Justin Anderson discussed the interoperability testing conducted in Cheyenne, Wyoming, which aimed to identify issues between different operational deployments using travel information messages. The testing involved various devices and configurations, and the results showed some issues with conflicting TIMS, directionality, and message count turnover. Justin also mentioned the successful testing of network V to X and SMS interoperability, and the plans for the next interoperability test event in early May 2025.

Mike Shulman from CAMP discussed the organization's efforts to establish trust in V2X direct PC5 messages, including the work on the Utah Smart Grant and the University of Michigan's conversion to CV2X.

Bobby McCurdy from ITS America presented updates on the second report in order from the FCC, which allows CV2X deployments to move beyond waivers, and discussed the implications of the administration transition on V2X policy.

Emi Carbary (AASHTO), Siva Narla (ITE), and Patrick Chan (SAE) provided organizational updates from each respective agency on V2X technology, deployment, and guidance.

Project Work Session

The team then discussed the agenda for the afternoon, which included a kickoff meeting for the Procurement Guidance project, updates on the MAP Guidance project, the Connected Work Zone project, and the Utah Smart Grant effort.

Procurement Guidance (WSP): The purpose of this effort is to develop model connected vehicle procurement documentation that may be used by IOOs to purchase the hardware and services that will fully meet interoperability requirements detailed in relevant V2X standards. IOOs can use these documents to ensure procurements result in connected vehicle infrastructure that fully meet interoperability standards.

Frank Perry and Christ Toth will be leading the tasks, while Lisa Saldin will lead the outreach. The project's period of performance is set at 12 months (Dec 2024 - Dec 2025), with status updates provided through monthly panel meetings and in-person meetings supported throughout the duration. Tasks will be as follows:

Task 1: Program Management
Task 2: Review Existing and Emerging Connected Vehicle Standards
Task 3: Interview IOOs and Connected Vehicle community to Document Model Procurement Documentation Needs
Task 4: Create Draft Model Connected Vehicle Procurement Documentation
Task 5: Outreach for feedback on Draft Task 4
Task 6: Create FINAL Model CV Procurement Document
Task 7: Create Outreach Materials to Facilitate Use of CV Procurement Documentation

Frank discussed the project's focus on developing procurement documentation for components and systems, with a particular emphasis on SMS and back-office systems. The team plans to interview stakeholders to gather feedback on what would help them procure necessary infrastructure components and related services. They also discussed the importance of interoperability among deployments and the need for clear procurement documentation. The team is considering including a testing document in the procurement package and is working on a framework to determine which requirements to include in the specification. The project's deliverables include two rounds of drafting and review, with the final draft to be produced after stakeholder feedback.

MAP Guidance Project: This project is led by Dean Deeter (Athey Creek). The team discussed the progress of the project, focusing on the development of a guidance document for MAP preparation, which began in April 2020 and has been ongoing as updates to the guidance are perpetual to keep current. Members of the CVPFS agreed to extend the project through July 2025 to gather more information and feedback from agencies. The team also discussed the transition from the 2735 map message to the 2945 RGA message, with the goal of understanding the impacts and developing a transition plan.

Connected Work Zones: This project is led by Dean Deeter (Athey Creek). The team discussed the concept of enabling deployment of affected work zones, and the challenges associated with it, which involves network cellular communication (such as Verizon) for work zones. Dean explored the idea of using geohashes to determine the location of work zones and the need for a standardized approach to avoid confusion; he also discussed the importance of defining the relevant area for a work zone and the potential for automation in the process. Moreover, the team considered the need for a universal standard for geohashes and the potential for different approaches from different companies; this presents the need for guidance on how to set up work zones and how to disseminate information about them.

Intersection Validation for Autonomous Vehicles

Participants and project teams discussed the development of a validation process for intersections to ensure accurate, consistent, and reliable data for autonomous vehicles. The team, including representatives from Ford, General Motors, Nissan, and SCMS Manager, is working on a pilot project to create a reference implementation corridor where the data is correct. They are also developing tools for self-validation of intersections and are considering the use of Lidar data for map validation. Furthermore, the team is also exploring the possibility of using survey data from field surveys for MAP validation. The conversation ended with a discussion on the challenges of validating RTCM data and the need for a specification for satellite data.

Lane Positioning and Connected Vehicles

Participants and project team members discussed the importance of accurate lane positioning for safety applications, particularly in urban canyons and areas with poor GPS coverage. Team members highlighted the need for a high-precision map and the potential use of vehicle-mounted LiDAR systems for lane detection. The CVPFS also discussed the challenges of deploying RTCM (Radio Technical Commission for Maritime Services) corrections, which are necessary for accurate GPS positioning. It was mentioned that while some automakers are not forthcoming with their RTCM requirements, others like Tesla rely on camera systems for localization. The CVPFS also shared updates on various projects, including the deployment of connected vehicle technology in Florida and Connecticut. The conversation ended with a discussion on the need for alignment with national standards and the importance of education and outreach in the field of connected vehicles.