

## Connected Intersections Committee & Interested Parties Meeting

The following are meeting notes from the meeting of the Connected Intersections (CI) Committee and Interested Parties. The meeting was a web conference on Friday, **May 29, scheduled from 11:30 PM EDT to 3:30 PM EDT**. The agenda and chat log can be found below.

### Call to Order & Welcome

Siva Narla welcomed everyone at 11:31 AM EDT. He noted that this project is funded by USDOT and supported by multiple Standards Development Organizations (SDOs).

Nicola Tavares reviewed ITE's Anti-Trust guidelines.

Roy Goudy called the meeting to order at 11:35 AM. Reviewed the agenda (provided below).

Welcoming Remarks by

- Deborah Curtis-USDOT
- Siva Narla-ITE
- Venkat Nallamotheu-AASHTO
- Thomas Kurihara-IEEE
- Jean Johnson-NEMA
- William Lerner-SAE International

### Roll Call of Committee

All committee members were present at some point during the meeting. A quorum was present at the beginning of the meeting.

Roy Goudy, Nissan (co-chair)

John Thai, City of Anaheim (co-chair)

Ali Ragan, Wyoming DOT

Doug Schmidt, APTIV

Ed Seymour, TTI

Faisal Saleem, Maricopa County

Jason Graves, DENSO

Jay Parikh, CAMP

Jim Misener, Qualcomm

Mike Schragin, McCain

Mike Shulman, Ford

Mike Stelts, Panasonic

Raj Ponnaluri, Florida DOT

Ray Starr, Minnesota DOT

Steve Bowles, 360 Network Solutions

Whitney Nottage, Intelight/Q-Free

Vivek Vijayakumar, GM

William Lerner, SAE (and ISO)

Total of 71 attendees. Also, in attendance at some point in the meeting were:

Steve Sill, USDOT

Deborah Curtis, USDOT

Dale Thompson, FHWA

AJ Lahiri, ConSysTec

Alan Clelland, Applied

Information

Anthony Gasiorowski, WSP

April Wire, Maricopa County DOT

Barry Einsig, Econolite

Blaine Leonard, UDOT

Christopher Poe, Mixon Hill

David Aylesworth, Ceve

Dean Deeter, Athey Creek

Consultants

Dimitri Khijniak, Parsons

Doug Tarico, Intelight/Q-Free

Ed Leslie, Leidos

Farukh Ijaz, Kimley-Horn

Jean Johnson, NEMA

Jesus Ruiz, McCain

Jim Paral, Jacobs

Joanna Wadsworth, City of Las Vegas  
Joerg Rosenbohm, Kapsch  
Justin McNew, JMC Rota  
Justin Anderson, Noblis  
Kellen Shain, Noblis  
Ken Yang, AECOM  
Kevin Balke, TTI  
Kevin Tobias, Pennsylvania  
Kevin Vitta, ITS America  
Kevin Chan, Minnesota DOT  
Linda Nana, Noblis

Matt D'Angelo, Gresham Smith  
Manny Insignares, ConSysTec  
Michael McGurrin, McGurrin Consulting  
Mohammed Hadi, FIU  
Nick Spatola, FDA  
Nicola Tavares, ITE  
Patrick Chan, ConSysTec  
Peter Jager, UDOT  
Purser Sturgeon, Southwest Research Institute  
Ralph Boaz, Pillar Consulting

Ramen Patel, RKP Associates  
Randel Roebuck, OmniAir  
Rob Baily, Kapsch  
Robert Saylor, City of Plano  
Shah Imran, Atkins  
Siva Narla, ITE  
Ted Sadler, Integral Blue  
Tom Kurihara, TkStds  
Tom Lusco, Iteris

## Review Purpose and Objective

John Thai went over meeting purpose and scope.

- Purpose:
  - To review the project scope and create subgroups to perform the work
- Objectives
  - Adopt the committee scope and project scope
  - Create subgroups

Roy Goudy mentioned Robert's Rules are in effect during the conduct of the meeting.

## Reviewed Project Schedule

Deliverable	Expected Completion
Initial ConOps	7/2/2020
Updated ConOps	8/26/2020
Requirements	11/2/2020
Systems Design	2/19/2021
Implementation Guidance Validation	6/21/2021
Finalize and Publish Implementation Guidance	9/13/2021

## Reviewed Committee Scope

John Thai went over committee scope.

Jean Johnson asked why first paragraph of scope background says ITE is developing rather than USDOT with the SDOs under the USDOT umbrella. Siva said paragraph will be re-written. Comments should be emailed using the comments form provided.

Reviewed an example of another comments and resolution form from another project. The form listed all the comments received, ranks its impact on the project, and its disposition. John proposes using same model for this project.

William Lerner emphasized using technically correct language and to be careful of words that may be interpreted differently in other countries.

Blaine Leonard mentioned that the last sentence of the committee scope section of the document should have automated transportation systems replaced with connected and automated transportation systems. Change was made to document.

Mike Schagrín brought up NEMA TS-10 project. Deborah Curtis said USDOT is aware of NEMA TS 10 and have commented. The RSU Standardization project will follow an ANSI process and is more open.

## Reviewed Project Scope

Vehicle correction - it means something different or limited knowledge of drivers. Needs to consider.

Kevin Balke mentioned that the scope doesn't cover pedestrian warnings and TIM messages. Roy Goudy said scope should be specific about what will be covered and what will not covered.

Ray Starr commented keep it to direct local communications.

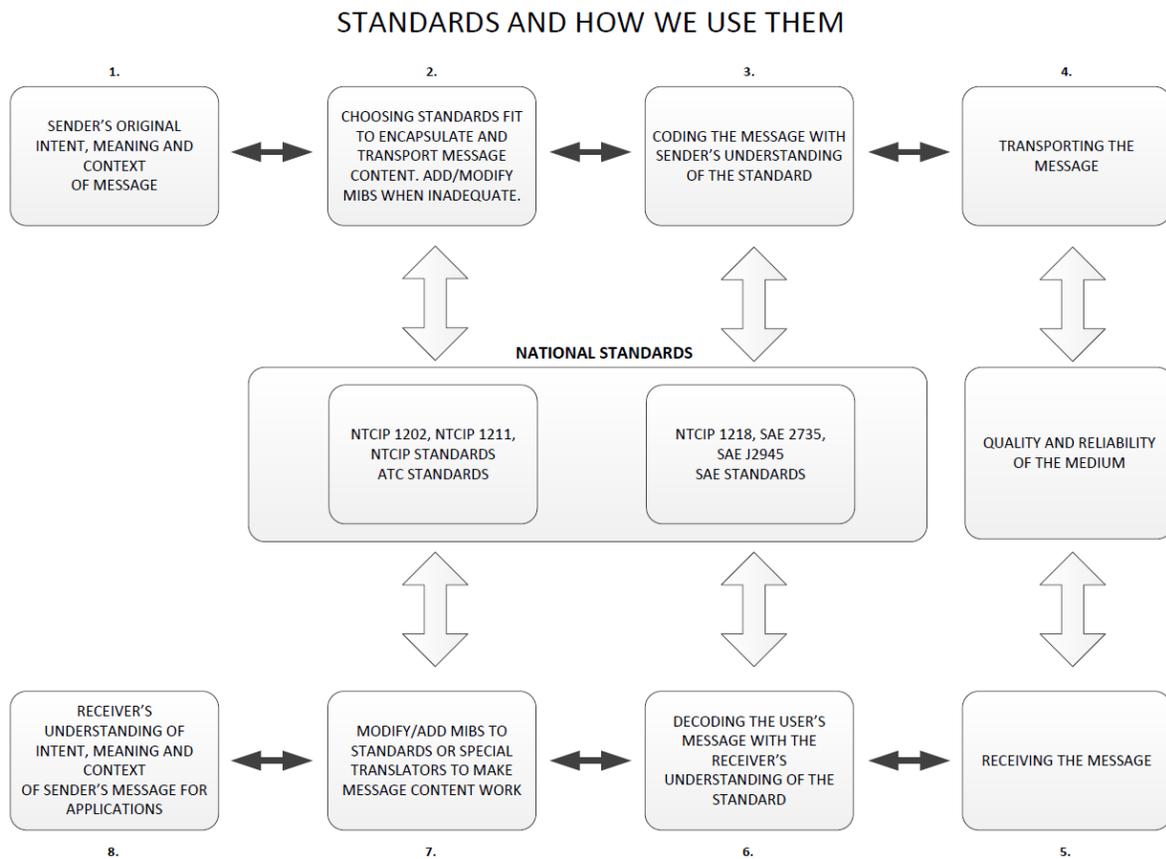
**Break - 12:55 PM to 13:10 PM EDT.**

Roy asked if the committee needs to mention other committee members. Siva replied we do need to recognize alternate committee members unless we need quorum. Leave it to the alternate to announce themselves if necessary.

**Reviewed ConOps Outline**

Barry Einsig asked who counts as a user (pedestrians, buses, trains).

Reviewed diagram on using standards (Figure 1 in the draft ConOps outline).



Ralph Boaz mentioned using different arrows on right side of the diagram because they reflect the flow of the message. That is a different relationship of using the standards for forming or interpreting the message.

Jean Johnson asked if RSU Specification v4.1 should be referenced in the diagram. Maybe not the number, and just identify the standard.

Kevin Balke mentioned identifying IEEE standards for quality and reliability of the medium? Does he mean IEEE 802.11?

Ray Starr mentioned focusing on the interface between OBU and RSU because it is key to the scope of this project. John Thai mentioned there could be unforeseen issues with the other interfaces.

Co-Chairs asked William Lerner and Barry Einsig for comments from the autonomous side (all comments for far from infrastructure side). They don't really have needs, but will consider.

Jay Parikh - confirmed the diagram was okay, but some of the details, such as the values that will be provided by the controllers/or the preemption equipment, are not addressed in the diagram. The diagram really represents the process, not the details - that will be borne out by the subgroups.

Michael Shulman - hoping the FCC will resolve the spectrum issues during the 2020 calendar year. Car manufacturers would like to include V2I applications in the 2022 production vehicles. CCI - would like to develop the requirements and the testing tools. Hoping in July this group will complete and bring some recommendations to the Ann Arbor test bed. Security manager is underway - to bring the OEMs underway.

Dimitri Khijniak asked how to check if users are in compliance with the guidance being developed.

William Whyte, the author for IEEE 1690.2 and 1609.2.1, and new project 1609.20 guidance document to implement security could be contacted. If his contract permits, he can be a good writer for security for ITS North American security. Highly recommended!

### **Went through Potential Needs of ConOps**

What happens if there is an element failure? Back-up capabilities when visual signals are absent.

Consistent format and use of time data set for the intersection with multiple devices transmitting a variety of messages with time stamps to a high level of precision. Define time precision requirements.

2.4.4. assurance to the traveler provided by the OEM service providers who makes the vehicle. Focus should be on the conveyance that has the characteristics built into it.

Jean Johnson suggested adding work zones to 2.4.6 Roadway Geometry.

Alan Clelland mentioned reassessing needs after discussion.

### **Went through Operational Scenarios of ConOps**

May consider including scenarios in the draft annex that would assist agencies to develop program planned for implementation using standards conforming products.

### **Went over and discussed Potential Work Area List**

- SPaT
- Mapping
- GNSS
- Security
- Testing

- Standards Revision

Noted looking at vulnerabilities at end points and network communications from the TMC to the vehicle.

What are TMC data needs for monitoring and controlling corridors of interconnected intersections and include greenway for emergency responders.

Security is cross-cutting and should be address across all of the subgroups.

Intersections could be identified by geospatial code and may have unique identifiers, in which case there is a need for a registry of unique intersection IDs.

Added signal priority/preemption as potential work area

Added BSM/PSM-what is minimum guidance for intersections to do with data?

Added standardized data elements and data retention. There needs to be a discussion about privacy and obfuscation. Data retention may be a local issue because of the Freedom of Information Act - various States have various data retention policies.

Consider including development of profiles to address variety of implementation situations. Current technology is to build platforms as implementation of standards profiles.

Accommodate placement of 5G micro stations on the roadside that may be competing for airtime and interferes with DSRC RSUs. Site licenses for devices and capabilities may be considered.

Note certification of standards conforming products and testing to designed interfaces.

5G antenna placement at intersections and potential interference and having a sensing device to serve as a canary to maintain 99.999 reliability and fidelity.

### **Next Steps**

Roy Goudy and John Thai will define work areas within a week. Consensus is needed as soon as possible.

Subgroups to be chosen by requesting leads/co-leads and volunteers. Guidelines for participating in the subgroups will be released.

Consensus to do a monthly meeting - maybe 2 hours for committee members. Nicola will set up a doodle poll. Every third month will be a meeting for committee members and interested parties. All are welcome.

Initial ConOps currently scheduled to be completed July 2.

Noted that all comments will be considered from everyone equally regardless of commenters role in the project.

Closing Remarks provided by Debora Curtis, Siva Narla, and Roy Goudy.

Meeting adjourned at 3:30 PM EDT.

## Agenda

1. Call to Order
2. Anti-Trust Guidelines
3. USDOT Welcoming Remarks
4. SDO Remarks (ITE, AASHTO, IEEE, NEMA, SAE)
5. Roll Call of Committee members
6. Review Purpose and Objective
7. Meeting Guidance/Robert's Rules
8. Review overall project schedule and progress to date
9. Review Committee Scope
10. Review Project Scope
11. Review ConOps Outline
12. Discussion of potential work areas
13. Subgroups
14. Next Steps
15. Next Meeting
16. Adjourn

## Chat log

**William S Lerner (to All - Entire Audience):** 11:44 AM: I would like to chime in about ISO standards and our constant quest to banish ambiguity. And, we have to do it for 164 countries interpreting the wording of a standard.

**Randal Roebuck (to All - Entire Audience):** 12:03 PM: What is the difference between this work and J2945/B activity? What is the release status of NEMA 1218 and its association with this work initiative?

**Kevin Balke (to All - Entire Audience):** 12:27 PM: Perhaps in scope you might also want to define what you are not covering. For example, under the scope as written, you are not covering items such as pedestrian warnings, TIM messages, etc.

**Blaine Leonard (to All - Entire Audience):** 12:28 PM: The last sentence of the 3rd paragraph of Section 2 of the scope says this effort is important "for the development of automated transportation systems, as they are expected to be important users of this technology". It seems that this effort is primarily focused on connected transportation, which is quite different than automated transportation. Granted, automated systems may also use and benefit from this, but this should be directly focused on connected transportation. I suggest we substitute this word "automated" with either "connected" or "connected and automated".

**Patrick Chan (to All - Entire Audience):** 12:30 PM: Randy: I'm can't answer what J2945/B scope is but this project focuses on deploying based on the current/existing versions of standards. As for NTCIP 1218, it's finishing SDO balloting and is for the management of an RSU. We'll talk about its association, if any, during the discussion later.

**Mike Schagrín (to All - Entire Audience):** 12:31 PM: There is work going on at NEMA to develop the next generation RSU standard (TS-10). How might this group take into account the work going on with this standard? Recommend this committee formally comment on the standard which is in the commenting phase right now. Key element is national interoperability which both groups are trying to achieve.

**Kevin Balke (to All - Entire Audience):** 12:38 PM: This the scope only limited to signalized intersections?

**john thai (to All - Entire Audience):** 12:39 PM: I think, my opinion only, we don't want to limit the problem areas known to us and would certainly be open to address other areas outside of signalized intersections subject to WG timeline and budget.

**john thai (to All - Entire Audience):** 12:40 PM: There is always a balancing act between needs and constraints of the project's work scope, schedule, etc.

**Ray Starr (to All - Entire Audience):** 12:42 PM: The existing CCI only includes Red Light Violation Warning.

**Ray Starr (to All - Entire Audience):** 12:44 PM: May want to limit communication technologies only to direct local communications, since network based communications may need different items due to not being localized geographically.

**William S Lerner (to All - Entire Audience):** 12:48 PM: Ray, great clarification!

**ITE Headquarters (to All - Entire Audience):** 1:02 PM: Announcement: Today's Meeting Documents (ConOps, Comment Form, Scope doc) can all be downloaded from the webinar MATERIALS pod. Please submit your completed comment form by email to: Standards@ite.org Thank you

**Thomas Kurihara (Private):** 1:13 PM: What permissions are needed to access the project documents for me in IEEE Vehicular Technology Society Standards Committee Chair?

**Barry Einsig (to All - Entire Audience):** 1:26 PM: Part of the reason for my question is not just who the users are we want to consider in the guideline but also clearly define what users are not, as an example is a pedestrian a user? Is a Bus, Truck or Train a user?

**Ed Seymour (to All - Entire Audience):** 1:29 PM: Barry, perhaps those designations for exclusions could be included in bounding conditions.

**Barry Einsig (to All - Entire Audience):** 1:32 PM: Thank Ed I completely agree, just so we can avoid scope creep

**Jean Johnson (to All - Entire Audience):** 1:35 PM: I would give some consideration to the philosophy that systems have needs, while parties (or actors) do not. Once a group gets into the space where a particular party "shall" do something, there is always a disagreement. Leave the guidance at system, or system component (transmission needs to be this frequent, for example). Or, if this is better, some needs might have been ascribed to drivers previously, but there are no drivers (or drivers with limited capability) in automated or autonomous vehicles.

**Barry Einsig (to All - Entire Audience):** 1:39 PM: Please be carefull deterministic has a very specific definition in networking and I dont think with humans in the loop you can ever get to actual determinism

**Ray Starr (to All - Entire Audience):** 1:40 PM: The diagram is a good representation of the process, but some may be out of scope of this project. Maybe the guidance should focus only on the RSU to OBU

interface, which is what is needed for interoperability. The interface between the controller and the RSU (NTCIP 1202v3) is not related to interoperability for a vehicle across the US and may be out of scope.

**Ralph Boaz (to All - Entire Audience):** 1:47 PM: Might want to use the different arrows on right side of the diagram because they reflect the flow of the message. That is a different relationship of using the standards for forming or interpreting the message.

**Jean Johnson (to All - Entire Audience):** 1:49 PM: John, in Fig 1, I'm assuming that most of the "base" standards have been done (as far as how to construct SPaT, for example). If the challenge is how to encode or decode consistently, then the guideline may help. If the problem is that there is a gap, then I don't see the guideline helping.

**Barry Einsig (to All - Entire Audience):** 1:57 PM: you may want to consider creating a working group to do a survey of the standards available and do a gap analysis

**Kevin Balke (to All - Entire Audience):** 2:01 PM: Should you reference IEEE standards for quality and reliability of medium?

**Kevin Balke (to All - Entire Audience):** 2:02 PM: What "arrows" is this implementation guidance trying to address?

**SIVA NARLA (to All - Entire Audience):** 2:07 PM: I have an overarching point about this

**William S Lerner (to All - Entire Audience):** 2:41 PM: Excellent point!

**Manny Insignares (to All - Entire Audience):** 2:43 PM: If the needs are written from the perspective of the system, aren't the needs really just high-level requirements? Aren't we just replacing shall statements with need statements?

**Jean Johnson (to All - Entire Audience):** 2:43 PM: At 2.4.6 Roadway Geometry, need to accommodate Work Zones.

**Barry Einsig (to All - Entire Audience):** 2:44 PM: If you are going to include SCMS you need to include minimum network requirements to support SCMS, and or video sharing or adaptive