**Cooperative Automated Transportation Coalition**
**Technical Resources Working Group**
**Quarterly Meeting Summary**
**Wednesday, May 6, 2020 11:00 am - 12:30 pm Eastern Time**

## Action Items

1. Everyone: Share leads, links, or attachments of resources with Faisal or Jeremy on:
   - Suggestions from WG members on ways to enhance impact, including: 1) proposed new WG Members, 2) communications with/Involvement in other initiatives, and 3) knowledge resources to include on the CAT Coalition Website.
   - Resources or information to support SPaT and Connected Fleet deployments.
2. Everyone: Contact Faisal, Jeremy, or Barbara Staples if your agency is interested in providing feedback in a small group 1-hour walkthrough on a SPaT/MAP Implementation Resource.
3. Everyone: Provide feedback on CV Deployment Resource.
4. Everyone: Contact Faisal, Jeremy, or Deb Curtis if interested in participating in USDOT Connected Intersection work related to the CCI effort and RSU Specification update.
5. Siva: share the meeting information for the RSU standardization effort, tentatively around June 2.
6. Ginny: send two-page document with additional information about the FHWA Roadway Integration with ADS ConOps to the group for additional input.

## Meeting Summary

**Ongoing Commitment to Outreach and Knowledge Transfer and Resources WG Recap**
- Resources WG members were reminded to provide suggestions for proposed new WG Members, share new information about communications with/involvement in other initiatives, and any knowledge resources to include on CAT Coalition website.
- Jeremy provided a brief recap of the previous Resources WG webinar in February; the meeting materials are posted online.

**Resources WG Recap, IOO/OEM Forum Work Plan and Linkages to Resources WG**
Venkat Nallamothu provided context for the IOO/OEM Forum Work Plan that outlines 20 activities to be completed in Years 3 and 4. Tom Kern described how the IOO/OEM Forum will benefit from feedback provided by the Resources Working Group, specifically on the SPaT/MAP requirements and Clarifications for Consistent Implementation (CCI) document, Connected Intersections Test Plan, and the approach for operating and maintaining Connected Intersections. Gummada Murthy noted that the IOO/OEM Forum outputs are not intended to consume the entirety of the Resources Working Group Members, and also that documents generated by the Resources Working Group may need to be added to the IOO/OEM Forum Work Plan if those resources could benefit by review and input from that group.

**Partner Updates**
- ITS America: Carlos Alban said ITS America submitted comments about the 5.9 GHz Spectrum and the Global Alliance automaker plan for using the Spectrum using both C-V2X and DSRC technologies. ITS America is engaging a V2X Coalition with a goal to preserve the Spectrum. The V2X Coalition is

being led by the ITS America policy team. ITS America is hosting a variety of webinars on topics including mobility on demand and impacts of COVID-19 on transportation.

- ITE: Siva Narla echoed the comments from Carlos about preserving the Spectrum, noting that the Global Alliance also reached out to ITE. Siva announced a Peer Exchange and Outreach webinar.
- USDOT: Deb Curtis –
  - Announced a May 19 webinar at 1:00-2:30 pm ET on the Work Zone Data Exchange (WZDx) entitled "Virtual Event on Increasing Worker and Driver Safety through Access to Work Zone Data. Anyone interested can **Register Here**.
  - Invited anyone interested in the Connected Intersection work regarding the CCI or the RSU Specification update to reach out to her to be involved. The next scheduled meeting for the RSU standardization will be around June 2.

**FHWA Roadway Automation Concept of Operations**

Ginny Crowson and John Corbin presented on the USDOT National Roadway Integration with ADS Concept of Operations (ConOps) with the goals of introducing the ConOps project and gathering some initial input from this working group. John Corbin provided an overview of the purpose and need for the ConOps. He noted that the origin of this ConOps project came from stakeholders suggesting it through various outreach activities, including the National Dialogue on Highway Automation. He noted that transportation agencies desired for FHWA to serve as a convener for engagement with industry and that the ConOps is intended to serve as a national vision for automation that could clarify goals and focus action. John described an automation ecosystem around four interacting dimensions: Communities and Travelers, Infrastructure Systems, Transportation Agencies & Institutional Systems, and Vehicle Systems and noted the interactions between these dimensions will be a focus of the ConOps.

John noted that this ConOps may not be formatted as a traditional ConOps, but rather will serve as a definitional document describing what IOOs will need to prepare for in the timeframe of approximately 2030-2035 with a partial mixed fleet of automated driving systems (Level 3 and above) and human driven vehicles.

Ginny provided additional information on the ConOps project. She noted that work began in October 2019 and will continue until September 2021 with six primary tasks:

- Task 1. Project Management
- Task 2. Background Documentation and Foundational Research
- Task 3. Stakeholder Engagement
- Task 4. ConOps Requirements Development
- Task 5. ConOps Development
- Task 6. ConOps Implementation Plan.

She noted that Task 3 (stakeholder engagement) is really a cornerstone of the project. This interaction today is part of this engagement and she noted that they will likely come back to this group later as the integration cases are further developed and needs are identified. She noted that Task 5 is the largest effort (ConOps Development) and will produce the primary document. Some more information on the ConOps:

- It will not be a standards document, but rather a context for roadway infrastructure needs and activities to support automated driving systems.
- It will be iterative and will evolve over time.
- It will be stakeholder driven.
- It will be strategic to address more than just a single system, but rather a system of systems. and
- Validated through stakeholder engagement.

The ConOps document will be divided into three parts:
- Part I – Executive Summary, focused on upper management,
- Part II – An accessible readable narrative, target audience of IOO staff
- Part II – Technical appendices for IOO specialists.

Ginny focused more on Part II, drawing attention to two sections where work is currently underway and input is desired:
- #6: ADS and Roadway Automation Context; and
- #7: ADS Integration Cases.

The context diagram builds upon the four dimensions John introduced, adding a series of interactions between those dimensions. For example, a Planning and Land Use interaction occurs between IOO Institutional Systems and Communities, Businesses and Travelers dimensions. This interaction includes the social and economic conditions within Communities, Businesses, and Travelers that influence longer term change in Institutional Systems. An example of this interaction includes a community using scenario planning to illustrate various levels of automation and identify the potential impacts on transportation that an IOO needs to factor into long range transportation planning.

Ginny introduced eight integration cases, explaining that these are expected to be prominent integration cases, but certainly not all of the integration cases by 2035. These cases, grouped into four groups include:

*Freight and Packages*
- Automated Long-Haul Freight
- Automated Local Freight Delivery
- Automated Home Package and Goods Delivery

*Transit*
- Automated Fixed Route Transit
- Automated On Demand Transit

*Individual Commuting & Travel*
- Automated Ride for Hire
- Automated Personal Vehicles

*Agency Operations*
- Automation of Fleet Vehicles

Faisal asked about the institutional work conducted by automation groups and where that fits in. Ginny responded that the vehicle systems are inclusive of the vehicles and supporting systems like mapping

companies and software developers that provide automation, while institutional systems are generally more focused on IOO regulation and policy efforts.

The levels of automation being focused on in this ConOps are Levels 3-5, recognizing that Levels 0-2 will be part of the mixed fleet in 2030. While Level 3-4 interfaces would be very different than Level 5, the ConOps will be focused on attainable and actionable outcomes by 2030, rather than broadening out to other areas.

Ginny noted that she will send a two-page document with additional information about the context to the group and would appreciate any additional input the group would like to send in email follow-up.

**CV Deployment Environment Discussion**
Jeremy presented a quick update of this effort to develop a resource for agencies considering a CV deployment to comprehensively understand the bigger picture of considerations, upgrades, and technologies needed to have a fully operational CV environment. One specific change he noted was the addition of a two-way arrow from broadband media representing cellular communications directly to roadside units in the main reference diagram used to generate this document.

The third section on TMC-ITS Systems has been reviewed by the small working group volunteers and their feedback is being incorporated. This group is currently reviewing the final two sections on Communications and CV and ITS External Support Systems. Faisal recognized the efforts of reviewers and thanked Jeremy for all of his contributions in developing the document. Jeremy will send an updated, complete version of this resource, which includes all five chapters and Executive Summary, to all WG members for additional review and comments. A new version including the In-Vehicle Systems and Vulnerable Road Users section will be sent to WG members in the coming weeks. The full document will be presented for additional comments on the August webinar.

**SPaT/MAP Implementation Resources**
Barbara Staples stepped through a fact sheet and chart that is being developed for USDOT and members of this community. This is still a work in progress, and feedback is requested from individuals in the Resources Working Group, as well as the SPaT/RLVW Working Group in the IOO/OEM Forum. Following additional feedback from others, these resources will be made available and be posted at a TBD location. The NOCoE SPaT Resources webpage will likely have a link to these resources when it is made available. Draft versions of these documents will be made available to Resources Working Group members to provide comments, although they are not yet ready to be widely distributed or posted.

**Upcoming Webinar & Close**
Members should have received a new meeting invite from Jeremy for Resources Working Group meetings in 2020 that will be held on:
- Wednesday, 8/12/2020 at 11am ET
- Wednesday, 11/11/2020 at 11am ET

## Attendance

1.  Faisal Saleem (Chair)      faisal.saleem@maricopa.gov
2.  Navin Katta (Co-Chair)     navin@savari.net
3.  Adam Shell                 adam.shell@iowadot.us
4.  Alvin Stamp                alvin.stamp@state.co.us
5.  Animesh Balse              animesh.balse@leidos.com
6.  Andy Manuel                anmanuel@cisco.com
7.  Barbara Staples            barbara.staples@noblis.org
8.  Barry Einsig               BEinsig@econolite.com
9.  Bob Rausch                 robert.rausch@transcore.com
10. Brian Burkhard             brian.burkhard@jacobs.com
11. Carlos Alban               calban@itsa.org
12. Craig Hinners              craig.hinners@cubic.com
13. Dean Deeter                dean_deeter@comcast.net
14. Deborah Curtis             deborah.curtis@dot.gov
15. Doug Hohulin               doug.hohulin@nokia.com
16. Gary Piotrowicz            gpiotrowicz@rcoc.org
17. Ginny Crowson              crowson@acconsultants.org
18. Govind Vadakpat            g.vadakpat@dot.gov
19. Gummada Murthy             gmurthy@aashto.org
20. Imran Inamdar              Imran.Inamdar@kapsch.net
21. Israel Lopez               israel.lopez@triuityeng.com
22. James Chang                james.chang@noblis.org
23. Jean Johnson               jean.johnson@nema.org
24. Jeremy Schroeder           schroeder@acconsultants.org
25. Jim Katsafanas             jkatsafanas@mbakerintl.com
26. John Corbin                john.corbin@dot.gov
27. John Roman                 john.m.roman@intel.com
28. Katie Blizzard             katherine.blizzard@leidos.com
29. Kevin Viita                kviita@itsa.org
30. Landon Perry               laperry@dot.ga.gov
31. Liana Mortazavi            liana.mortazavi@us.panasonic.com
32. Mauricio Guerra            mguerra@qti.qualconmm.com
33. Mohammed Hadi              hadim@fiu.edu
34. Patrick Chan               patrick.chan@consystec.com
35. Peter Thompson             pth@sandag.org
36. Peter Jager                pjager@utah.gov
37. Pierre Rasoldier           pierre.rasoldier@tc.gc.ca
38. Purser Sturgeon            psturgeon@swri.org
39. Rachel Ostroff             rachel.ostroff@icf.com
40. Ray Derr                   rderr@nas.edu
41. Ray Starr                  ray.starr@state.mn.us
42. Robert Dingess             rdingess@mercerstrategic.com

43. Roxanne Mukai      rmukai@mdta.state.md.us
44. Stephen Mensah      stephen.mensah@stantec.com
45. Safak Ercisli      safak.ercisli@leidos.com
46. Shah Imran      mdshah.imran@atkinsglobal.com
47. Siva Narla      sivanarla@gmail.com
48. Steve Lockwood      lockwood@slockwood.com
49. Thomas Timcho      tom.timcho@wsp.com
50. Tom Kern      thomasewingkern@gmail.com
51. Venkat Nallamothu      vnallamothu@aashto.org
52. W Zou      wzou@cisco.com