

CAT Coalition

Strategic Initiatives Technical Working Group

January 23, 2020 Webinar

Notes and Summary of Discussions

Welcome

Blaine Leonard welcomed everyone to the webinar. Approximately 42 members and guests joined the webinar. A list of those in attendance is provided at the end of these notes.

Ongoing Commitment to Outreach and Knowledge Transfer

Blaine invited webinar participants to identify others who were not participating in this working group but would find the information valuable or be a good resource for sharing information. He also asked participants to think about related initiatives that this group may want to coordinate with. No one had immediate input; however, participants are asked to notify Blaine or Dean if they think of individuals or groups later.

New Topic #1 – Fleet Challenge Deployment Example

Sahasini Natarajan and Diederick VanDillen from Jacobs discussed the Maryland Transportation Authority (MDTA) deployment of roadside units (RSUs) at freeway tunnels and on-board units (OBUs) installed on fleet vehicles to generate and broadcast Basic Safety Messages (BSMs). This pilot project was initiated by MDTA and worked with Maryland's toll authority by designing, installing, and testing DSRC along Maryland's facilities to prepare for autonomous vehicles. The project collected, stored, and reported BSM1 data received by 4 RSUs using different vendors and 2 OBUs borrowed on short-term loan from FHWA. RSUs were placed at the ends of 2 tunnels and OBUs were mounted in vehicle recovery trucks.

This project began in July 2017. OBUs broadcasted the BSM 10 times per second. The data that was broadcast and received by the RSUs included the vehicle latitude/longitude, speed, acceleration, heading, and brake status. The RSU then communicated the data to a central location using 4G/LTE communications.

Results, lessons learned, and comments from this pilot include:

- Some OBU sizes are not designed for implementation under the dash.
- In and around tunnels GPS tends to lose its signal. It took 20-30 seconds to re-establish a connection after dropping the signal.
- A temporary ID may be necessary to identify the OBU for the BSM that was communicated.

- Some units experienced loss of power.

The next steps for this project are to monitor phase 1 communication and develop the scope for phase 2 which is still in the discussion and early planning stages but may focus on developing a user interface for connected vehicles. A copy of the slides is being circulated with this summary.

New Topic #2 – Caltrans Testing of 4G LTE for SPaT/MAP Broadcasts

Kun Zhou discussed the Caltrans efforts to demonstrate the Red-Light Violation Warning (RLVW) application to compare latency associated with point-to-point communication compared with network 4G LTE communications.

Kun demonstrated the simultaneous V2I data collection over DSRC and 4G LTE and presented a simultaneous in-vehicle display of V2I information. The slide deck contains detailed findings and graphs mapping the latency encountered from both communications approaches. Kun shared a summary of the findings of this study that indicated:

- A 5.9 GHz band spectrum is necessary for safety applications that require reliable and short communication latency.
- Existing 4G LTE network communications could support mobility applications.

New Topic #3 – New Hampshire Testing of 4G LTE for SPaT/MAP Broadcasts

Curtis Thompson (Sebago) presented New Hampshire's testing of 4G LTE for SPaT/MAP broadcasts. This project was funded through New Hampshire DOT but involved several other partners including the City of Dover, NH, Denso who provided the RSU and OBU, and the University of New Hampshire (UNH) Connectivity Research Center (CRC) that oversaw the analysis.

Two communications paths, DSRC radio technology and 4G/LTE cellular network, were used to communicate data from the controller to either the DSRC OBU or LTE radio equipped on the vehicles. Both communication paths underwent lab testing before going into the field and both communications had the same file size. Observations and findings from the study included:

- The field test showed DSRC average latency ranged from 5ms to 20ms (.005 seconds - .020 seconds) with a maximum range of 800 meters – and noted that the field results were better than the bench testing that showed average latency of 70ms;
- The field test showed 4G LTE average latency ranged from 128ms to 142ms (.128 seconds - .142 seconds) – also noting that field results were better than bench test results of 150ms (.150 seconds).
- Some interoperability challenges exist and there are some equipment limitations.
- FCC licensing for 5.9 GHz is more intensive.
- MAP file creation and operation was observed to be mostly accurate.

- A final report was completed in January 2019. If others are interested in seeing it, they can contact Curtis Thompson.
- DSRC radio will remain in operation in the field with the hope of using it in future pedestrian activity.

Update on Topics Discussed During the Previous Webinar

Dean provided an update from the SPaT/Connected Fleet Challenge webinar series. All webinars have concluded with the last 3 webinars occurring in October 2019, November 2019, and January 2020. The webinars were recorded and are available on the [CAT Coalition website](#). There are no plans for further webinars at this time; however, if additional webinars are needed, they could be organized.

PLR Working Group Update

Dean updated members on an activity that the Policy, Legislative, Regulatory (PLR) Working Group to explore the language used in state legislation to describe automated driving systems. The effort is researching to understand the different terms used to define and describe automated vehicles. Members of the PLR Working Group will continue to update the Strategic Initiatives WG members as this project progresses.

Partner Reports: US DOT ITS America, ITE, Other

No partners offered reports. Partner reports will be revisited at the next webinar.

Close

The next webinar is scheduled for Thursday, April 23, 2020, at 2 pm Eastern.

TWG 1 January 23, 2020 Webinar Participants

- Blaine Leonard (Chair)
- Ahmad Jawad
- Alan Clelland
- Alexandra Lohman
- Animesh Balse
- Anjan Rayamajhi
- Bob Taylor
- Corey Tsang
- Curtis Thompson
- Dean Deeter
- Diederick VanDillen
- Frank Provenzano
- James Chang
- Jason Ellis
- Jeff Stewart
- Jeremy Schroeder
- Jesus Ruiz
- Jianming Ma
- Jim Misener
- Joe Averkamp (Co-Chair)
- John Abraham
- John Roman
- Jon Riehl
- Ken Yang
- Kent Kacir
- Kun Zhou
- Kyle Garrett
- Lev Pinelis
- Liana Mortazavi
- Marcella Kaplan
- Mike Schagrin
- Mohammed Hadi
- Patrick Son
- Pierre Rasoldier
- Rob Dingess
- Roxane Mukai
- Shah Imran
- Shane McKenzie
- Steve Lockwood
- Suhasini Natarajan
- Susan Catlett
- Weimin Huang

CAT Coalition Strategic Initiatives TWG – Jan 23, 2020 Webinar Agenda

1. Outreach and Knowledge Transfer
2. New Topic #1: Fleet Challenge Deployment Example (Maryland Transit Authority)
3. New Topic #2: Caltrans Testing of 4G LTE for SPaT/MAP
4. New Topic #3: New Hampshire Testing of 4G LTE for SPaT/MAP Broadcasts
5. Topics from Previous Webinars
 - SPaT/Fleet Challenge Webinars Update
6. PLR Working Group Update
7. Partner Reports

1

Outreach and Knowledge Transfer

- Suggestions for additional members of this working group
- Suggestions for additional resources to be shared

2

Fleet Challenge Deployment Example (Maryland Transit Authority)

Diederick VanDillen & Suhasini Natarajan, Jacobs



3

Caltrans Testing of 4G LTE for SPaT/MAP Broadcasts

Kun Zhou, PATH



4

4

New Hampshire Testing of 4G LTE for SPaT/MAP Broadcasts

Curtis Thompson, Sebago



5

Update on Topics from Previous Webinars

Connected Fleet Challenge Website & Resources



6

6

Connected Fleet Challenge Webinars

- Webinar #1: October 3, 2019
 - Focus on Deployments in operation
- Webinar #2: November 21, 2019
 - Focus on OBU Installations and Testing of Broadcasts
- Webinar #3: January 9, 2020
 - Focus on Installation, testing, lessons learned

All webinars recorded, posted on the CAT Coalition website:
<https://transportationops.org/spatchallenge/webinarseries>



7

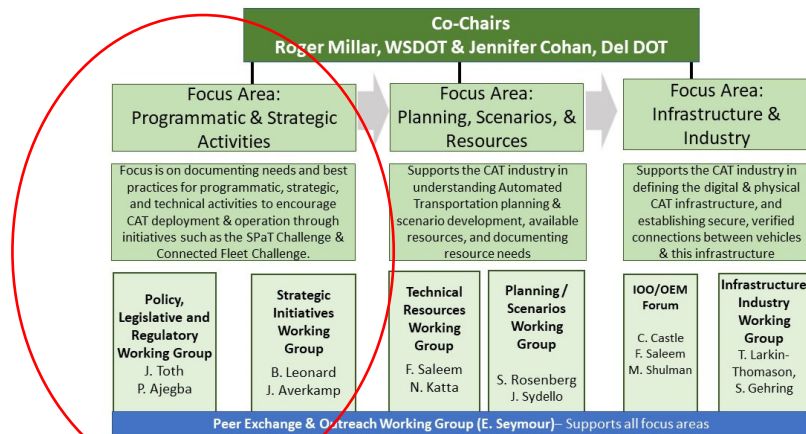
7

Brief Update from the Focus Area Working Group: Policy, Legislative, Regulatory (PLR) WG



8

Programmatic & Strategic Activities Focus Area



9

Plain Language for Automated Driving Systems (ADS) Policies

The Challenge/Need:

- Legislators need clear concise nomenclature with common definitions when creating & reviewing policies & legislation

The Concept:

- Review what language & terms are used in existing ADS policies & legislation in member states
- Synthesize terms; identify conflicts, challenges, and commonalities
- Coordinate with a parallel USDOT effort underway
- This effort **Will NOT** create any guidelines or recommendations for nomenclature

10

Recap of our Presentation in the October PLR Webinar

Emphasis on four terms defined in SAE J3016 (also included in AV 3.0):

- Generally all terms are consistently defined
 - Intent appears in line with references, some local wording changes
- Some states excluded 1 or 2 of the terms
- The states differ in authoritative statements - how their laws describe the use of “automated driving systems”

Initial Four Terms Explored:

- Automated Driving Systems
- Dynamic Driving Task
- Minimal Risk Conditions
- Operational Design Domain

Summary of Findings

Terms in Authority Statement	# of states reviewed – use this term for the Authority Statement
Autonomous Vehicle	3
Fully Autonomous Vehicle	2
Driverless capable vehicle	2
Fully autonomous (“...if such vehicles are fully autonomous”)	1
Automated driving system	1
Autonomous vehicle with automated driving systems engaged	1
Fully autonomous vehicle with automated driving systems engaged	1

Agenda Item #5: Partner Reports

USDOT

AASHTO

ITE – Siva Narla

ITS America – Carlos Alban



13

Next Strategic Initiatives WG Webinar

- Next Webinar:
 - April 23rd, 2020 2:00 PM Eastern



14

14