

## V2I Deployment Coalition Monthly Meeting Minutes

June 8, 2016 – 11:00-12:30 (Eastern)

### Actions

1. Faisal Saleem: Work with Steve Lockwood and USDOT to arrange follow-up discussion between TWG 4 and USDOT regarding Deployment Guidance comments. *It was suggested that this discussion take place during the October or November meetings for TWG 4. The action will remain open until USDOT identifies a publication date for the Deployment Guidance.*
2. Faisal Saleem/Ginny Crowson: Following approval by TWG chairs and co-chairs, submit summaries of Issue 6: V2I Outreach and Issue 11: V2I Consumer Messaging to USDOT. *Summaries will be submitted with Tech Memo 4 for the full V2I DC.*
3. Faisal Saleem/Navin Katta/Ginny Crowson: Discuss how TWG 4 can best review and comment on products that will be issued to support V2I Deployment Guidance. *Need to arrange coordination meeting with Jonathan Walker.*
4. Ginny Crowson: Keep in touch with Cliff Heise regarding Iteris work on CVRIA integration with ITS Architecture and explore options for presentation to TWG 4 toward the end of 2016. *This will remain an open action through 2016.*
5. All: Further review pre-deployment guidance details associated with the four applications and provide any additional feedback to Ginny.

### Attendance

1. Faisal Saleem (Chair)	Maricopa Co., AZ	<a href="mailto:faisalsaleem@mail.maricopa.gov">faisalsaleem@mail.maricopa.gov</a>
2. Navin Katta (Co-Chair)	Savari Inc.	<a href="mailto:navin@savarinetworks.com">navin@savarinetworks.com</a>
3. Emil Wolanin	Montgomery Co., MD	<a href="mailto:emil.wolanin@montgomerycountymd.gov">emil.wolanin@montgomerycountymd.gov</a>
4. Virginia Lingham	MTC (Bay Area)	<a href="mailto:vlingham@mtc.ca.gov">vlingham@mtc.ca.gov</a>
5. Stephanie Fischer	USDOT	<a href="mailto:stephanie.fischer@dot.gov">stephanie.fischer@dot.gov</a>
6. Shel Leader	Private Consultant-Telecom	<a href="mailto:shel@sleader.com">shel@sleader.com</a>
7. Naveen Lamba	Grant Thornton	<a href="mailto:naveen.lamba@us.gt.com">naveen.lamba@us.gt.com</a>
8. Martha Morecock Eddy	Timmons Group	<a href="mailto:martha.eddy@timmons.com">martha.eddy@timmons.com</a>
9. Mohammed Hadi	Florida Intl University	<a href="mailto:hadim@fiu.edu">hadim@fiu.edu</a>
10. Koorosh Olyai	Stantec	<a href="mailto:koorosh.olyai@stantec.com">koorosh.olyai@stantec.com</a>
11. Darryl Dawson	ITS Engineering Ltd.	<a href="mailto:ddawson@itsengineering-ltd.com">ddawson@itsengineering-ltd.com</a>
12. Robert Taylor	Penn Turnpike Commission	<a href="mailto:robtaylo@paturndpike.com">robtaylo@paturndpike.com</a>
13. Bob Koeberlein	Idaho DOT	<a href="mailto:robert.koeberlein@itd.idaho.gov">robert.koeberlein@itd.idaho.gov</a>
14. Cliff Heise	Iteris	<a href="mailto:cdh@iteris.com">cdh@iteris.com</a>
15. Tim Simodynes	Iowa DOT	<a href="mailto:tim.simodynes@dot.iowa.gov">tim.simodynes@dot.iowa.gov</a>
16. Elizabeth Birriel	Florida DOT	<a href="mailto:elizabeth.birriel@dot.state.fl.us">elizabeth.birriel@dot.state.fl.us</a>
17. Jim Frazer	Gridadaptive Technologies	<a href="mailto:jfrazer@gridaptive.com">jfrazer@gridaptive.com</a>

18. Barry Pekilis	Transport Canada	<a href="mailto:barry.pekilis@tc.gc.ca">barry.pekilis@tc.gc.ca</a>
19. Dean Erickson	Triunity Eng. & Mgmt.	<a href="mailto:dean.erickson@triunityeng.com">dean.erickson@triunityeng.com</a>
20. Matt Volz	HDR	<a href="mailto:matthew.volz@hdrinc.com">matthew.volz@hdrinc.com</a>
21. Samian Kaur	InterDigital	<a href="mailto:samian.kaur@interdigital.com">samian.kaur@interdigital.com</a>
22. Dale Thompson	USDOT FHWA	<a href="mailto:dale.thompson@dot.gov">dale.thompson@dot.gov</a>
23. Ginny Crowson (Liaison)	Athey Creek Consultants	<a href="mailto:crowson@acconsultants.org">crowson@acconsultants.org</a>

## May Meeting Recap

Highlights from the May meeting were briefly recapped by Faisal Saleem. The primary discussion topic for the meeting was to discuss draft pre-deployment guidance for the V2I applications that have been identified as priority by the V2I DC:

- Work zone management (RSZW)
- Curve warning
- Queue warning
- Intersections (RLVW)

Dean Deeter reviewed the history and approach used by the ENTERPRISE pooled fund to develop draft pre-deployment guidance for RSZW and curve warning. The group then reviewed and discussed details for the two applications. The other two applications – queue warning and intersections (RLVW) – will be discussed during the this (June 8) meeting.

Steven Bayless also joined the May meeting to share recent activities associated with DSRC. He explained that the NTCA – The Rural Broadband Association recently requested sharing of the 5.9 GHz spectrum and intervention from the White House with the FCC. Faisal noted that all actions from the previous meeting have been completed and he concluded the recap and noted that we would share additional information regarding the DSRC topic during the meeting.

## Discuss Pre-Deployment Guidance

Ginny Crowson provided a brief recap of the history and approach for developing the pre-deployment guidance and the two applications that were reviewed during the May meeting. Ginny then introduced a proposed purpose for queue warning based on operational concept in the concept of operations developed by USDOT:

*To minimize the occurrence and impact of traffic queues by enabling vehicles within the queue event to automatically broadcast their queued status information (e.g., rapid deceleration, disabled status, lane location) to nearby upstream vehicles and to infrastructure-based central entities (such as the TMC) in order to minimize or prevent rear-end or other secondary collisions.*

Faisal commented that the purpose could be further revised to differentiate between alerting vs. warning. Emil Wolanin agreed and added that alerts may be more oriented toward transportation agencies for mobility management purposes, especially for agencies with active traffic management operations. Virginia Lingham further agreed and noted that the alert oriented purpose could also support more near-term implementation of the queue warning application. Shel Leader asked how many warnings could

potentially be issued to drivers simultaneously and questioned if or how the V2I Deployment Guidance would address the driver implications as well as the potential simultaneous use of DSRC channels.

Ginny then led the group through a discussion of the conditions and parameters that might be established as critical factors for queue warning. Naveen Lamba suggested there may be three ways of looking at queue warning – for safety, mobility and operations. Safety in terms of preventing collisions. Mobility in terms of preventing travel time delay, and operations in terms of the agencies with active traffic management functions. Under safety, for example, Naveen suggested that queue length extending into a preceding intersection, or queues due to visual limitations (e.g. curves) could serve as critical factors. He added that speed should also be considered when critical factors are further fleshed out. Faisal added that weather conditions, like speed, could also influence the critical factors.

Ginny shifted the discussion to next review intersection RLVW. Based on the operational concept in the concept of operations developed by USDOT, the suggested purpose for RLVW is:

*To provide a warning to the vehicle driver that, based on their speeds and distance to the intersection, they may violate an upcoming red light. An equipped vehicle approaching an equipped intersection receives messages about the signal phase and timing, intersection geometry, and position correction information. The driver is issued a warning if the application determines that, given current operating conditions, the driver is predicted to violate the red light.*

Shel Leader commented that the connotation associated with “violation” tends to focus on law enforcement vs. simply warning the driver the light is about to turn red. Bob Taylor agreed and added that the term “violation” may give the wrong impression to the public. Emil asked if application will focus exclusively on warning the driver who about to run the red light, or if it will also alert surrounding drivers to allow them to take evasive action. Navin Katta suggested there might need to be separate application for motorist notification. Shel noted that this discussion about RLVW could illustrate how multiple channels could be used simultaneously in the 5.9 GHz band – one for the driver about to violate, one for the other drivers approaching the intersection, one for V2V communication, etc.

Faisal suggested there could also be an operational purpose associated with RLVW. One that would allow signal timing to be adjusted real-time for anticipated violations (e.g. extending red for cross traffic). Bob Taylor added that road weather conditions and vehicle type could other variables to consider in the crucial factors for this application. Martha Morecock-Eddy also noted that speeds should play a significant role in the critical factors. Ginny concluded the discussion on pre-deployment guidance by asking the group to individually further review the four applications, considering discussions to-date, and provide any further feedback on the pre-deployment guidance content. Feedback from TWG 4 will be summarized and shared with USDOT as they continue the work to more formally develop pre-deployment guidance for these and other applications.

### [DSRC/5.9 GHz Status](#)

Ginny Crowson explained that since the update from Steven Bayless during the May meeting, the FCC has issued a public notice requesting an update and refresh of the record on Unlicensed National Information Infrastructure devices in the 5.9 GHz band. In short, the notice proposes two approaches for sharing the band for both U-NII and public safety purposes. The notice also proposes prototype testing of unlicensed,

interference-avoiding devices. The proposed testing would be concluded no later than January 15, 2017. The full notice is available online through the FCC and Federal Register websites as follows:

- Federal Register: <https://www.federalregister.gov/articles/2016/06/07/2016-13510/unlicensed-national-information-infrastructure-u-nii-devices-in-the-5-ghz-band>
- FCC: <https://www.fcc.gov/document/59-ghz-public-notice>

Public comments are due July 7. It is also likely that an informational webinar will be hosted by AASHTO, ITE, ITS America or some combination of the three. More details will be shared as they become available.

Shel Leader noted that it may not be entirely clear how the band will be used for V2I and V2V applications, specifically that multiple channels may be used to simultaneously deliver messages for a spectrum of services at an intersection which would make sharing very challenging. Barry Pekilis asked if anyone was aware of vendors who have existing equipment that could support an interference-avoiding sharing of the band. Shel replied that Cisco and Qualcomm have both claimed to have such equipment and he assumes it must be ready for testing based on the very short timeframes the FCC notice references for prototype testing. Shel further suggested that responses to the FCC should include use case scenarios demonstrating how V2I and V2V applications would use the band in a real-world setting. For example, the earlier discussion regarding potential simultaneous broadcasts from multiple messages associated with red light violation at an intersection. This would help FCC better understand how public agencies envision their use of the band.

#### Next Steps for TWG 4

Faisal noted progress with the work plan originally developed for TWG 4, highlighting the additional review of Guidance products that will be planned in the coming months in lieu of the new Guidance being released. He noted that Ginny has sent meeting notices for the remainder of 2016 and he reminded the group that the next meeting will be on July 13, from 11:00-12:30 (Eastern). There were no additional closing comments from the group.

## TWG 4 Work Plan Summary and Status

<b>V2I Deployment Issues</b>	<b>Anticipated TWG 4 Actions</b>	<b>Anticipated Completion Date</b>
<b>Issue 1: V2X Applications</b>	<ul style="list-style-type: none"> <li>Identify relevant content from this issue that should be included in the overall outreach in Issue 6 based on TWG 3 findings.</li> </ul>	<b>Q1-2016 Underway</b>
<b>Issue 2: Complementary Communications to DSRC</b>	<i>No action planned</i>	
<b>Issue 3: V2I Data</b>	<i>No action planned</i>	
<b>Issue 4: Patents-Intellectual Property</b>	<i>No action planned</i>	
<b>Issue 5: Security</b>	<i>No action planned</i>	
<b>Issue 6: V2I Outreach</b>	<ul style="list-style-type: none"> <li>Provide input to USDOT on V14 of Deployment Guidance.</li> </ul>	<b>6-29-2015 Completed</b>
	<ul style="list-style-type: none"> <li>Identify outreach that may be needed to increase awareness and support of V2I among transportation agencies.</li> </ul>	<b>Q3-2015 Completed and Q2-2016</b>
	<ul style="list-style-type: none"> <li>Provide input to USDOT on additional content for next version of Deployment Guidance and associated products.</li> </ul>	<b>Q4-2015</b>
<b>Issue 7: Understanding the Benefits and Costs of V2I Deployment</b>	<ul style="list-style-type: none"> <li>Identify relevant content related to calculating the benefits and costs of V2I applications based on work by TWG 1 that should be included in overall outreach in Issue 6.</li> </ul>	<b>Q2-2016</b>
<b>Issue 8: V2I Standards</b>	<i>No action planned</i>	
<b>Issue 9: Understanding V2I Liability Assignment</b>	<ul style="list-style-type: none"> <li>Identify relevant content related to V2I liability assignment that should be included in overall outreach in Issue 6 based on TWG 2 findings.</li> </ul>	<b>Q2-2016</b>
<b>Issue 10: V2I Synergies with Other Emerging Technologies</b>	<i>No action planned</i>	
<b>Issue 11: V2I Consumer Messaging</b>	<ul style="list-style-type: none"> <li>Develop a description of the type of content and guidelines that are needed to be developed to enable consistent, accurate consumer messaging related to V2I applications.</li> </ul>	<b>Q4-2015 Completed</b>
<b>Issue 12: V2I Multimodal Applications</b>	<i>No action planned</i>	
<b>Issue 13: Infrastructure Processes as V2I Obstacles</b>	<ul style="list-style-type: none"> <li>Identify relevant content related to infrastructure processes based on work completed by TWG 1 and TWG 3 that should be included in overall outreach in Issue 6.</li> </ul>	<b>Q1-2016 Underway</b>
<b>Issue 14: Federal V2I Policy Statement</b>	<ul style="list-style-type: none"> <li>Identify relevant content related to a Federal V2I policy statement based on work done by TWG 1 that should be included in feedback on the V2I Guidance documents.</li> </ul>	<b>Q4-2015 Underway</b>
<b>Issue 15: Maintaining V2I Infrastructure</b>	<i>No action planned</i>	