



Special Committee on Wireless Communications Technology (SCOWCT)

2016 Annual Meeting

October 26-27, 2016

Florida DOT District 7 Headquarters: Tampa, FL

Meeting Notes

Attendees:

- Paul Steinman, Florida DOT (SCOWCT Chair)
- Randy Van Portfliet, Michigan DOT
- David Chase, New Hampshire DOT
- Paul Gilbert, Texas DOT
- Russ Buchholz, North Dakota DOT
- Ferdinand Milanes, Caltrans
- Jeff Sundholm, Iowa DOT
- Paul Degges, Tennessee DOT
- John Nisbet, Washington State DOT
- Pat Brueggeman, South Dakota DOT
- Jack Cobb, Colorado DOT
- Stephen Glascock, Louisiana DOTD
- Phil Lazarus, Maryland DOT
- Jim Mohn, Minnesota DOT
- Roger Madden, Florida DOT
- Peter Moncure, RadioSoft Inc.
- Randy Pierce, Florida DOT
- Russell Allen, Florida DOT
- Pete Costello, Iteris
- Siva Narla, ITE
- Larry Head, University of Arizona
- Robert Bertini, University of S. Florida CUTR
- Josh Pedersen, HNTB/Florida DOT
- Brian Gorman, Florida DOT
- Bob Frey, Tampa Hillsborough Expressway Authority
- Simon Ou, University of S. Florida
- Brian Kassa, FirstNet
- James Bitting, Lucent Group Inc.
- David Chang, Atkins
- Zhiqiang (Adam) Wu, University of S. Florida
- Bob Arnold, FHWA
- Gummada Murthy, AASHTO
- Linda Preisen, Athey Creek Consultants/AASHTO
- Rosemary TenEyck, AASHTO
- Ocie Adams, AKDOT&PF (phone)
- Donna Hardy, West Virginia DOT (phone)
- Jim Lambert, West Virginia DOT (phone)
- Chris Butler, West Virginia DOT (phone)
- Brandi Krofcheck, West Virginia DOT (phone)
- Ryan Satterfield, West Virginia DOT (phone)

Meeting Day 1: October 26

See presentation slides posted at: <http://scowt.transportation.org/Pages/2016-Annual-Meeting.aspx>

1. Introduction and Opening Remarks

- Paul J. Steinman, SCOWCT Chair, welcomed attendees and provided an overview of the committee, followed by an overview of the meeting agenda.
- Bob Arnold, FHWA Office of Operations, who serves as a SCOWCT Committee Liaison to SCOWCT, provided opening remarks on behalf of FHWA.

2. Keynote Address

- Paul Degges, Tennessee DOT Deputy Commissioner/Chief Engineer and Vice Chair of the AASHTO Standing Committee on Highways (SCOH), shared insights as a leader of an agency with competing demands for limited funds to build, maintain, and manage transportation systems.
 - Robert Bertini, Executive Director, Univ. of S. Florida Center for Urban Transportation Research (CUTR) - CUTR works closely with partners that include FDOT and Tampa Hillsborough Expressway Authority on transportation research and education.
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3. FHWA Updates

- Bob Arnold noted that the FHWA Office of Operations has developed several guidance resources to assist agencies with technology deployments, including resources to support the deployment of CV/AV technologies. FHWA Office of Operations website: <http://ops.fhwa.dot.gov/>

4. AASHTO Updates

- **STSMO Update** - John Nisbet, Washington State DOT and Vice Chair, STSMO
STSMO has 5 technical working groups: Systems Operations Strategies, Performance Measures, TSM&O Research, Traffic Incident Management, and Connected Vehicles. One of STSMO's strategic initiatives is workforce development. Research is underway to create an operations guide.
- **Other AASHTO Updates** - Gummada Murthy, AASHTO Liaison to SCOWCT
 - A proposed revised AASHTO Committee Structure was shared. In this structure, SCOWCT would join the "Transportation System Operations" committee.
 - The Vehicle to Infrastructure Deployment Coalition (V2I DC) is focusing on 4 applications of connected vehicles: intersections, queue warnings, work zone management, and curve warnings. A priority activity is interacting with OEMs. The SPaT Challenge encourages agencies to equip at least one corridor (roughly 20 signalized intersections) in each of the 50 states with DSRC infrastructure to broadcast SPaT information by January 2020. See <http://transportationops.org/publications/spat-challenge> for info about the SPaT challenge.

5. SCOWCT Strategic Direction Initiative – Chair Paul Steinman and SCOWCT Leadership Team

- SCOWCT re-initiated its activities in 2015 and created strategic objectives for its 4 technical working groups. A proposal was created and submitted to NCHRP 20-7, proposing research and development of a strategic framework to formalize an ongoing communications technology program. The proposal was not funded in Spring 2016 and was resubmitted in Fall 2016.

6. Industry Panel

- **Radio Communications: Now and Looking Ahead** - Peter Moncure, RadioSoft, Inc.
There is a need to quantify the value of public communications infrastructure. How can agencies assign value to this? What is the worth? What is the economic value? This valuation will assist agencies when private entities wish to utilize this infrastructure.
- **ITS Technologies and Communications** - Pete Costello, Iteris
Iteris conducts transportation consulting focused on ITS, with focus areas in traffic management system planning/design, software development and integration; traveler information; and transit planning/design. Bluetooth beacons are emerging as a new technology to power "virtual VMS" for travel times and in-vehicle 511 messages.

7. Technical Presentations: Connected and Autonomous Vehicles

- **SunTrax Test Track for High-Speed Tolling & CV/AV** – Josh Pedersen, HNTB/Florida DOT
This test track is being constructed primarily for research and testing of high-speed tolling technologies. Toll equipment, express lanes, managed lanes, and innovative payment systems will be tested. The infield area will be available for CV/AV research and testing. This could be a good site for future research related to SCOWCT interests (e.g. DSRC testing).
 - **DSRC & 5.9 GHz Spectrum / ITS Standards** – Larry Head, University of Arizona
An overview of channels in the 5.9 GHz range of frequencies was provided. Channel 172 is dedicated to safety of life. Several IEEE standards define how DSRC works and protocol for communications. Standards for CV messages are outlined in SAE standards. Two options for
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sharing have been proposed for 5.9 GHz spectrum sharing: 1) detect and vacate; and 2) re-channelization; review at FCC is still underway.

- **Connected Vehicle Pilot Project** – Bob Frey, Tampa Hillsborough Expressway Authority
Connected Vehicle applications included in the deployment: #1 morning peak hour queues; #2 Wrong-way entries; #3 pedestrian safety; #4 BRT signal priority optimization, trip times, and safety; #5 trolley vehicle collisions; #6 enhanced signal control and traffic progression. The project includes 40 RSUs, 1500 cars and light trucks, 10 buses, and 10 trolley cars. The deployment is utilizing primarily DSRC, with WiFi being used for the pedestrian application.

8. FirstNet Status and Update - Brian Kassa, FirstNet Dallas

- 200 MHz of bandwidth in the 700 MHz frequency range has been dedicated to public safety. Congress designated funding to develop a public-private partnership for the FirstNet system. The first short term goal is to make data mission critical for public safety. Consultation by FirstNet has occurred with US states and territories. An RFP was issued to procure the network solution. Each state governor will be presented with a draft plan for opting in or out of FirstNet. Review of the draft will be conducted through each state's Single Point of Contact (SPOC). Public safety partners will determine communications priority protocol for the FirstNet system.

9. Technical Presentations: Cybersecurity

- **National Cybersecurity Task Force Framework** – Siva Narla, ITE
A Transportation System Cyber-Security Framework is under development, with support from USDOT and including partners ITE, ITS America, AASHTO, NEMA, and NACTO. The framework is intended to create awareness and to share processes and guidelines to self-manage cybersecurity risks. Anticipated working groups (WGs): Stakeholder WG, Red Team, Vendor Supplier WG, Security/Law Enforcement WG. A central repository for best practices/resources and support is planned.
- **Cyber-Physical Systems and Security** - Simon Ou, University of South Florida Center for Cybersecurity
Dr. Ou is a computer science professor whose research interests include cyber physical systems and security. His current research investigates how computing devices are configured to avoid cybersecurity breaches. He is interested in expanding into transportation-related cybersecurity research. Transportation agencies that operated field devices connected to DOT central systems, are prone to cyber-attacks and could be a conduit into other state systems. This type of interconnectivity makes it very difficult to protect systems. Best practices will help reduce the risks.

10. Results from DOT Survey on Communications Activities and Needs – Linda Preisen, SCOWCT Coordinator

- TWG2 initiated a survey to collect input from DOTs to help shape SCOWCT's future activities. Results to date revealed common needs in the areas of interoperability, better reliability, faster speeds, and increased coverage. Workforce development, expertise, and training needs were also identified.
 - 23 State DOTs have completed the survey. The survey will be re-opened and SCOWCT members will help solicit additional responses from agencies that have not yet responded.
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Meeting Day 2: October 27

See presentation slides posted at: <http://scowt.transportation.org/Pages/2016-Annual-Meeting.aspx>

11. Year in Review and Strategic Planning:

- See presentation slides for year in review highlights.
- Each Technical Working Group (TWG) reviewed its strategic objectives and identified the following:
 - Presentations for future TWG meetings: Educational topics and sharing of best practices
 - Tasks/Initiatives

Tasks/initiatives will be prioritized during future TWG meetings. TWGs will also define specific steps to complete each chosen initiative.

TWG1 1 Legacy Programs – Lead Paul Gilbert

Suggested Presentations for Future Meetings:

1. Results from Studies that Evaluated Need for Radio: TxDOT approach for determining need to retain 2-way radio based on safety needs. ND DOT study to evaluate value of radio towers.
2. NPSTC and TIA P-25 Updates and Input from SCOWCT: Continue to receive updates from Paul Gilbert on activities of these groups; collect input from SCOWCT members to be communicated back to these associations/groups.
3. Land Mobile Communications Council Updates: After LMCC Annual Meeting in April.

Tasks/Initiatives (Prioritization Needed):

1. Promote AASTHO Frequency Coordination services/business: Re-engage local frequency advisors and promote statewide frequency advisors. Determine how to help DOTs understand the benefits to having statewide advisors. AASHTO has a voice with the FCC as a formal frequency coordinator; AASHTO's frequency coordination program also facilitates networking/relationships and helps to influence policy.
2. Promote increased DOT presence at the International Wireless Communications Expo (IWCE).
3. Organize training on Radio Frequency design (RadioSoft support); highlight changes to rules that impact RF design.
4. COMT/COML training – encourage prerequisites.
5. Support the development and retention of qualified personnel for radio communications operations. Work with STSMO Operations Strategy group; this is a shared initiative and they have submitted a proposal to NCHRP for funding on workforce development.
6. Invite tabletop displays by vendors at meetings. AASHTO can invite vendors to present and exhibit, as long as a technical/educational component is provided. Need to identify product types and vendors of interest.
7. FirstNet: Track progress, implications to DOT radio operations, and transition to deployment.
8. Change the name of this working group.

TWG2 Spectrum Management – Lead Randy Van Portfliet

Presentations for Future Meetings:

1. Spectrum Management Practices from Railroad Industry – RRd industry has managed spectrum very well. Look at this model to see if there are practices that can be applied by DOTs. Peter Moncure has contacts to be invited to provide a presentation.
2. Status of 4.9 GHz band: FCC will likely want to share it. Update after 1st quarter of 2017. Peter Moncure to provide this update.

Tasks/Initiatives: (Prioritization Needed)

1. DOT Communications Survey: Outreach to DOTs that haven't responded. Collect responses and update results. Dedicate a TWG2 meeting in late Feb or early March to review results and determine what the committee should do with the findings. Share findings with STSMO prior to their May meeting in SD; consider how STSMO (Operational Strategies Working Group) and SCOWCT can work together to utilize results. Consider workforce development needs identified by respondents; STSMO submitted an NCHRP proposal on this topic.
2. Collaborate with STSMO Operational Strategies working group, SCOTSEM and Maintenance. Potential topics: Share DOT communications survey results, possibly develop a primer on backhaul strategies and practices, consider potential AASHTO role in microwave licensing.
3. Explore the potential to lobby the FCC for additional frequencies for low-power broadcast (HAR): Ask for primary status. These broadcast devices can be coordinated in a disaster – local governments, state, etc. Develop an issue-based paper (volunteers Randy Pierce, Ferdinand Milanes, Roger Madden, Peter Moncure.) Clearly state the uses and functional applications in the paper; work with STSMO Operations Strategies group to refine the paper.
4. Determine and implement a mechanism to monitor and communicate FCC developments, and respond as appropriate. The FCC Daily Digest contains notices of proposed rulemaking – anyone can sign up to receive it.
5. Low band: How to make better use of low band spectrum? Could the FCC be petitioned to change the current rule?

TWG3 Cybersecurity - Lead Russ Buchholz

Suggested Presentations for Future Meetings:

1. DHS Cybersecurity Assessment of Caltrans TMC - Ferdinand Milanes or other rep from Caltrans
2. NH DOT Practices for Security of Cell Modems - David Chase, New Hampshire DOT
3. National Institute of Standards & Technology (NIST) Framework for Improving Critical Infrastructure Cybersecurity) and Roadmap into Transportation (DHS) – Invite Ed Folk, FHWA, to present an overview of transportation cybersecurity issues and considerations. Request additional contacts from Ed, to provide educational presentations and materials.
4. ITS Assets Infrastructure Tracking: FDOT has mapped out their ITS assets and can share their practices (Randy Pierce).
5. Alaska DOT's approach to communications and ITS infrastructure is very secure. Critical partnerships with law enforcement and other entities are in place (FBI, etc.) This could be a case study to share lessons learned. (Ocie Adams).
6. Other ideas: Auto telematics, Cybersecurity ITS architecture. Need to identify presenters.

Tasks/Initiatives:

1. Explore how AASTHO can play a role in developing a common practice around tracking ITS and communications infrastructure (asset management, potentially a product or tool developed by AASHTO.) This is especially critical to address potential cybersecurity threats and respond to attacks/events. Opportunity to partner with STSMO Operational Strategies group.
2. Support and participate in activities of the newly formed National Transportation Cybersecurity Framework led by ITE, with several partners. Working groups will be defined in the next 2-3 months. Siva Narla is the contact to provide updates.

TWG4 Future and Emerging Technology – Lead Ferdinand Milanese

Suggested Presentations for Future Meetings:

1. Fiber Optics: Backhaul for Connected Vehicles, Fiber for CV infrastructure (Oregon), Extensive fiber network (Missouri), Fiber sharing (Utah), Infrastructure management and coordination with other entities. All TWGs interested in this topic.
2. Phasing out Analog: Florida DOT could share information about practices for integrating older systems with new IP-based systems. Mixing analog with digital - best practices. (Randy Pierce)
3. Orange County, California: Presentation on how their county comm's system is managed. Lots of equipment and data. Presenter TBD: this was presented at a joint SCOTSEM/TRB conference in Irvine 2-3 years ago.
4. Emerging Technologies for LMR: Phase 2 P25 and DMR. DMR is being implemented in Dallas, TX. P25 is now a requirement for Caltrans.
5. Use of 900 MHz for HAR in El Paso, Texas.

Tasks/Initiatives (Needs prioritization):

1. Support members with phasing out analog: This is an ideal application for 4.9 GHz point to point; currently not allowed. An FCC rulemaking is expected at the end of 2016 or early 2017; assist AASHTO with preparing comments. See #2 above for related educational presentation.
2. Support CV/AV Standards Development:
 - Review a white paper to be prepared by Larry Head which will include a gap analysis on standards. Conduct a webinar to share white paper findings. Contribute to shaping next steps needed per gap analysis. Collaborate with STSMO on this standards work.
 - CV Footprint Analyses and Near Term CV Tools: Consider potential AASHTO role; what is the radius in which it will work?
3. Conduct education and outreach to stakeholders about DSRC, CV, and AV project status
 - FHWA DSRC Licensing Guidelines Document: Continue to conduct outreach so State DOTs have basic info for licensing DSRC devices.
 - Other CV/AV Resources (V2I Deployment Guidance, SPaT Challenge resources, others)
4. Contribute to future updates of the FHWA Licensing Guidelines document. Identify gaps and assist in modifying as needed.
5. Continue to follow FirstNet: How to manage this transition? How will it evolve and how will DOTs benefit? What's their architecture and plan of operations? What will they charge?
6. Support TWG3 with asset management initiative (focus on fiber/backhaul.)

Previous initiatives (potentially to be carried forward):

1. Determine user needs & applications (public safety & commercial) to be implemented on DSRC.
2. Define user needs and requirements for DSRC, CV, and AV
3. Develop a primer or resource document: Options, approaches, framework, backhaul methods, resource sharing.

12. Potential Research Topics:

- How much mobile data are DOTs collecting? Will help agencies to understand communications capability, especially with transition to FirstNet. Also, best practices for data use.
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- Workforce Development: Work with STSMO Operational Strategies group. STSMO has a submitted proposal on this topic; how to incorporate workforce issues related to DOT communications? MnDOT has a challenge with hiring technicians. Workforce/training programs are not in place train technicians.
 - AK DOT&PF – Replacing RWIS with low power equipment. Research being conducted and can Ocie can share findings via a future TWG meeting.

13. Wrap-Up:

- Location of 2017 SCOWCT Annual Meeting: Minneapolis, Dallas, or Tampa were suggested.
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