

# 2014 Public Safety Broadband Stakeholder Conference

## Session Information & Abstracts



# PSCR

- All sessions will take place in Westminster Ballrooms I, II, and III
- Presentations can be found at <http://www.pscr.gov/agenda.php>
- All sessions will include dedicated Q&A time.

### Session 1: Research & Development Roadmapping

**Presenter:** Dereck Orr, PSCR

**Description:** In November 2013, PSCR held a Public Safety Broadband Research and Development (R&D) Roadmap Workshop. This workshop gathered stakeholders from public safety, state, local, and Federal government, and industry to discuss what R&D is necessary over the long-term, 5-10+ years, in order to enable LTE technology to fully meet the needs of the public safety community. Continuing the progress from that workshop, PSCR will:

- Demonstrate a public safety capabilities visualization tool built on data gathered from the November workshop;
- Discuss ongoing efforts and collect data inputs from conference participants to create an updated public safety scenario built on future technology capabilities, and;
- Provide an update on progress made towards a capability-specific technology roadmap

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### Session 2: FirstNet Leadership Updates

**Speakers:** TJ Kennedy, FirstNet; Ali Afrashteh, FirstNet; Jeff Bratcher, FirstNet

**Description:** In March 2014 the First Responder Network Authority (FirstNet) Board voted to proceed toward several important milestones along the authority's preliminary strategic roadmap – a course of action designed to ensure the building and management of a nationwide, interoperable, public safety communications network. FirstNet's Deputy General Manager and new Chief Technical Officer will provide an update and address questions regarding FirstNet's progress in implementing the strategic roadmap and discuss key activities for the next year.

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### **Session 3: Modeling & Simulation**

**Speakers:** Nada Golmie, PSCR; Richard Rouil, PSCR

**Description:** The Public Safety Communication Research (PSCR) program has been developing modeling and simulation tools to analyze and predict the performance of a future nationwide, interoperable public safety broadband network. These simulation models are intended to provide valuable information during the early phase of network planning, including data on network and feature performance and analysis of potential network architecture and site locations.

This talk covers the effects of large-scale incidents and network failures on the public safety broadband network. Until now our simulation and modeling results have mainly considered day-to-day public safety operations to assessing the number of sites needed, the users covered and the throughput achieved. In this talk, we focus on what happens in the event of larger incidents and network failures. How does a network designed and built to support public safety day-to-day traffic be affected by larger incidents? How sensitive is it to varying traffic loads? How resilient is the network in the case of equipment failures or infrastructure loss?

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### **Session 4: FirstNet Planning, Consultation, and Outreach Updates**

**Speakers:** Serena Maxey, DHS OEC; Keil Green, DHS OEC; Dave Buchanan, FirstNet; Rich Reed, FirstNet; Amanda Hilliard, FirstNet; Ed Parkinson, FirstNet

**Description:** The Middle Class Tax Relief and Job Creation Act of 2012 requires that FirstNet consult with regional, state, and local jurisdictions in developing requests for proposals and otherwise carrying out its responsibilities. The DHS Office of Emergency Communications has engaged with states through broadband coverage workshops to help prepare them for consultation with FirstNet. OEC will present findings from the workshops conducted to date. FirstNet will provide an overview of the state consultation process and discuss how they are preparing states for the process. FirstNet will also discuss its current outreach efforts and plans to expand.

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### **Session 5: Priority, Pre-Emption, and Quality of Service**

**Speakers:** Dr. Rob Stafford, PSCR; Todd Bohling, PSCR; Tracy McElvaney, PSCR

**Description:** Priority, Pre-emption and Quality of Service (QoS) are terms often used when talking about the National Public Safety Broadband Network. Spread across several 3GPP releases and different standards within those releases, these terms can create confusion for the Public Safety user. The Public Safety Communications Research team will attempt to de-mystify Priority, Pre-emption and QoS by presenting an overview from the end-user perspective. In addition, PSCR will introduce the evaluation approach being employed in the FirstNet QoS project.

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### **Session 6: Indoor/In-Building Testing**

**Presenter:** Dr. Bob Johnk, PSCR

**Description:** This session will focus on in-building Band 14 research conducted by PSCR engineers. The topics will include the difficulties encountered in establishing reliable communications and satisfactory network performance inside buildings. This session will also discuss and compare methods for improving in-building coverage. Results from three recent measurement campaigns will be featured and discussed in some detail to highlight these important issues.

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### **Session 7: Extended Range Cell Testing**

**Speakers:** Chris Redding, PSCR; Camillo Gentile, PSCR

**Description:** Extended cell range or boomer cells have been used for years in various cellular technologies to provide wide area coverage. The use of boomer cells for coverage in rural areas will be a critical capability for public safety to provide communications in remote areas. PSCR has augmented its existing demonstration network to test and evaluate a boomer cell, which will extend an LTE cell radius beyond the typical range of 2-3 miles to a range of 48 miles. PSCR has performed RF modeling and deployed this scenario. We will be presenting the results of the modeling and field measurements.

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### **Session 8: Mobile Applications Security for Public Safety**

**Moderator:** Nelson Hastings, PSCR

**Panelists:** Alex Kreilein, DHS OEC; Traviss Green, Lockheed Martin Corporation; Theodora Titonis, Veracode

**Description:** Mobile applications connect first responders to data that enables them with actionable information from situational awareness to real-time video communications. However, the risks associated with mobile applications may threaten operations if gone unchecked. Critical security and performance flaws enable the intentional exploitation of vulnerabilities by malicious actors or the unintentional consequences brought forth by poor code development and review practices. This session explores the current state of mobile applications risks, discusses opportunities for improvement on the status quo, and provides analysis for practitioners on available mitigations that address the risks articulated.

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### **Session 9: Video Quality Research**

**Presenter:** Dr. Joel Dumke, PSCR

**Description:** This session will present the research of the Public Safety Video Quality (PSVQ) project under PSCR. This project was established to determine how video is used in public safety applications and to make recommendations to practitioners. Topics will include a new definition of video quality, a new quality assessment method, results from subjective testing, and a network optimization method that incorporates those results.

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## **Session 10: Customs and Border Protection: Merging LMR & LTE Devices**

**Moderator:** Todd Bohling, PSCR

**Panelists:** Bill Krimmel, DHS; Gary Ruegg, Interop Solutions, LCC; Per Johansson, MaXentric Technologies, LLC; David Pederson, Elbit Systems

**Description:** PSCR has been selected by the Department of Homeland Security to perform technical assessment and testing for the CBP Technology Demonstrator Project. The project is evaluating integrating legacy LMR devices with LTE, providing an approach to allow remote security key and software upgrades. Come here about the next generation of devices that will provide interoperability between LTE and LMR.

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## **Session 11: Audio Quality**

**Speakers:** Andrew Catellier, NTIA ITS; Steve Voran, NTIA ITS

**Description:** This session will focus on Audio Quality in public safety communications. First, we will recap the Modified Rhyme Test (MRT) work conducted by the PSRC in recent years. Speech intelligibility issues associated with high-noise public-safety environments drove these tests. The work produced three substantial reports as well as thousands of speech files and associated MRT scores, all available at PSCR.gov. Next, we will present a software tool that efficiently estimates MRT results without conducting actual MRT tests. This software tool, dubbed ABC-MRT, uses temporal correlations of loudness patterns in articulation index bands to select one of six MRT words. As in the MRT, the ABC-MRT word-selection success rate forms a measure of speech intelligibility. We characterize the agreement between ABC-MRT estimates and the corresponding true MRT scores for 139 different communication scenarios. We also provide a live demonstration of a laptop-based ABC-MRT implementation that estimates the intelligibility of speech in the presence of recorded public-safety noise environments. Finally, we will describe planned future PSCR efforts to apply both ABC-MRT and MRT to characterize speech coders with respect to potential mission critical voice applications over LTE networks. In light of earlier results, we consider intelligibility in high noise environments to be a key consideration and we consider analog FM to be a key reference point for this work.

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## **Session 12: Small Cell Technology**

**Panelists:** Jonathan Cook, PSCR; Dan Picker, Purewave; David Gross, Global Wireless Technologies

**Description:** In the commercial world small cells are being used to add capacity to systems. For public safety applications, PSCR is investigating them for coverage scenarios that include on vehicle mounting, poles and ceilings. Come learn about what defines a small cell (power, size, etc.), how they can be utilized and what some of the issues are implementing them i.e. GPS timing & backhaul. We'll also be presenting our initial results from our small cell testing.

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### **Session 13: Next Generation Network Priority Services Testing & Evaluation**

**Moderator:** Tracy McElvaney, PSCR

**Panelists:** Anna Paulson, PSCR; Admiral Ron Hewitt, DHS OEC; Chris Essid, DHS OEC

**Description:** In support of National Security and Emergency Preparedness (NS/EP), it is necessary to extend existing Wireless Priority Services (WPS) by enabling Next Generation Network Priority Services (NGN-PS) over the LTE commercial network. The Department of Homeland Security Office of Emergency Communications (OEC) is sponsoring Public Safety Communications Research (PSCR) in a joint effort to build a Testing and Evaluation program focused on enabling of the NS/EP NGN Priority services. During this discussion the OEC and PSCR teams will present the state of NGN-PS as well as the strategy and methodology of building the NGN-PS Testing and Evaluation program.

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### **Session 14: Requirements Gathering & Standards Development**

**Speakers:** Andrew Thiessen, PSCR; Barry Luke, NPSTC, Pam Montanari, NPSTC

**Description:** Requirements and standards are many times the beginning of the product development life cycle that results in equipment that can be used by the public safety community. This session will detail how the Public Safety Communications Research team works to ensure that the public safety community remains firmly in the driver's seat for articulating their requirements, and how those requirements in turn translate into action for the development of standards to base equipment production on.

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### **Session 15: Local Control**

**Moderator:** Steve Devine, Missouri Department of Public Safety

**Panelists:** Gino Scribano, Motorola Solutions; Wim Brouwer, Alcatel Lucent; Andrew Thiessen, PSCR

**Description:** As FirstNet develops the Nationwide Public Safety Broadband Network, local control as it relates to the LTE network will be a critical component for each public safety organization to fulfill their mission. Experience shows that the needs of various public safety agencies are unique and can vary over both long and short time horizons. Therefore, flexibility must be built into the network to meet the local needs of each jurisdiction and to ensure that public safety has the control they need, when they need it, in partnership with FirstNet.

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