2017

Welcome
to the 9th Annual

PUBLIC SAFETY BROADBAND STAKEHOLDER MEETING

Marriott Rivercenter | San Antonio, TX
June 12—14

PSCR

#PSCR2017

This annual meeting is meant to bring together representatives from public safety, Federal agencies, industry, and academia. You will hear from PSCR engineers about testing updates, upcoming R&D efforts, and opportunities to get involved. The PSCR also invites industry leaders and public safety partners to present cutting edge technology trends, features, and functionalities. The annual Stakeholder Meeting enables PSCR to receive direct input, guidance, and feedback from their diverse stakeholder community.

These are very exciting times for the PSCR! With funds made available from the Middle Class Tax Relief Act in 2012 , the PSCR is able to establish an R&D program to help advance public safety communications technology capabilities.

Don't miss all of the exciting things we have planned!

- See what the PSCR is doing with Virtual Reality – Use the app to sign up for a 10 minute virtual reality demo
- Visit the Poster room to see the Grant Awardee Project Overviews
- Check out the demo tables throughout the conference
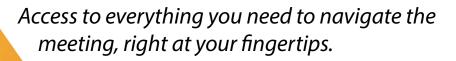- Don't miss all of the exciting speakers from PSCR, academia, industry, and public safety

Table of Contents

PUBLIC SAFETY BROADBAND STAKEHOLDER MEETING MOBILE APP

Access to everything you need to navigate the meeting, right at your fingertips.

PSCR
San Antonio
2017

Download the PSCR Mobile App!

- Personalized Meeting Schedule
- Session Handouts
- Live Polls
- Speaker Information
- Event Announcements
- Attendee Messaging

Download Instructions:

1	2	3
From your app store, download the Crowd Compass Directory	Type the meeting name into the search bar 2017 Public Safety Broadband Stakeholder Meeting	Enter your name & email to create a Crowd Compass Account

PSCR | PUBLIC SAFETY COMMUNICATIONS RESEARCH

#PSCR2017

AGENDA

Time	Session
7:00AM—8:00AM	**Check-in**
8:00AM—8:45AM	**Welcome & Kick Off** **Dereck Orr -** *Acting NIST CTL Lab Director & PSCR Division Chief*
8:45AM—9:15AM	**Day 1 Keynote** **Sue Swenson -** *FirstNet Chairwoman*
9:15AM—10:45AM	**Public Safety Mission Critical Voice** *Latest research plans and results from PSCR* **Richard Rouil -** *PSCR Modeling & Simulation* **Jeb Benson** - *PSCR Technology Acceleration & External Research Group* **David Griffith** - *PSCR Modeling & Simulation*
10:45AM—11:00AM	**BREAK**
11:00AM—12:00PM	**Advancing Mission Critical Voice Technologies Through PSCR's Innovation Accelerator Grant Program** **Moderator: Jeb Benson** - *PSCR Technology Acceleration & External Research Group* **Fidel Liberal** - *Universidad del Pays Vasco (UPV) Euskal Herriko Unibertsitatea (EHU)* **Robert Escalle** - *Sonim Technologies, Inc.* **Paul Sutton** - *Software Radio Systems Limited* **Richard Lau** - *Vencore Labs, Inc.* **Sumit Roy** - *University of Washington* **Sean Sangodoyin** - *University of Southern California*

PSCR
2017
PUBLIC SAFETY BROADBAND
STAKEHOLDER MEETING

Marriott Rivercenter | San Antonio, TX

#PSCR2017

DAY 1
MONDAY, JUNE 12TH
All sessions to take place in the Salon I
Conference Room

AGENDA

Time	Session
12:00PM—1:30PM	**LUNCH - *Please note that lunch will not be provided**
1:30PM—2:30PM	**Indoor Location-Based Services for Public Safety** *PSCR research plans and current findings* **David Howe** - *NIST Physical Measurement Laboratory (PML)/PSCR* **Fabio da Silva** - *NIST Physical Measurement Laboratory (PML)/PSCR* **Alicia Evangelista** - *Yet2* **Brienne Engel** - *Yet2*
2:30PM—3:00PM	**BREAK**
3:00PM—4:00PM	**Advancing Public Safety Analytics Through PSCR's Innovation Accelerator Grant Program** **Moderator: John Garofolo -** *NIST Information Technology Laboratory (ITL)/PSCR Video Analytics* **Alex Hauptmann** - *Carnegie Mellon University* **David Blankenship** - *Western Fire Chiefs* **Homa Alemzadeh** - *University of Virginia* **Tyler Garner** - *Prominent Edge LLC*
4:00PM—5:00PM	**Public Safety Communications Security** *Update on current projects from the PSCR Security team* **John Beltz** - *PSCR Security* **Michael Ogata** - *NIST Information Technology Laboratory (ITL)/PSCR* **Gema Howell** - *NIST Information Technology Laboratory (ITL)/PSCR* **Jeff Cichonski** - *NIST Information Technology Laboratory (ITL)/PSCR*

PSCR 2017
PUBLIC SAFETY BROADBAND STAKEHOLDER MEETING

Marriott Rivercenter | San Antonio, TX

DAY 2
TUESDAY, JUNE 13TH

**8:00a.m.-3:00p.m. sessions to take place in Salon I Conference Room

#PSCR2017

AGENDA

Time	Session
8:00AM—8:30AM	**Day 2 Keynote** **Assistant Chief Anthony Treviño** - *San Antonio Police Department*
8:30AM—9:00AM	**How Crowdsourcing can Drive Open Innovation** *An overview of PSCR's Open Innovation Program* **Heather Evans** - *NIST Program Coordination Office*
9:00AM—10:00AM	**Public Safety LTE goes Global** *An update from international partners on their public safety LTE deployments* **Moderator: Jason Kahn** - *PSCR Research, Testing, & Evaluation Group* **Joe Fournier** - *Canada's Federal Government Centre for Security Science (CSS)* **David Lund** - *Public Safety Communication Europe (PSCE) Forum* **Gordon Shipley** - *UK Home Office Emergency Service Mobile Communications Programme (ESMCP)*
10:00AM—10:30AM	**BREAK**
10:30AM—12:00PM	**The FirstNet & AT&T Partnership: Priorities & Progress** **Moderator: Dereck Orr** - *Acting NIST CTL Lab Director & PSCR Division Chief* **Jeff Bratcher** - *FirstNet Chief Technology Officer* **Rich Reed** - *FirstNet Chief Customer Officer* **Salim Patel** - *AT&T Technology Architecture Planning*
12:00PM—1:30PM	**LUNCH - *Please note that lunch will not be provided**
1:30PM—2:00PM	**The Public Safety User Interfaces of Tomorrow** *An overview of the recently published technology roadmap* **Dereck Orr** - *Acting NIST CTL Lab Director & PSCR Division Chief* **Ryan Felts** - *PSCR Roadmapping Support* **Marc Leh** - *PSCR Roadmapping Support*
2:00PM—3:00PM	**A User Driven Approach to Identifying Communications & Data Needs from Station to Scene** *An in-depth look at PSCR's Usability Research* **Mary Theofanos** - *NIST Material Measurement Laboratory (MML)/PSCR* **Kristen Greene** - *NIST Information Technology Laboratory (ITL)/PSCR* **Shanee Dawkins** - *NIST Information Technology Laboratory (ITL)/PSCR* **Yee-Yin Choong** - *NIST Information Technology Laboratory (ITL)/PSCR* **Sandra Spickard Prettyman** - *Culture Catalyst* **Ryan Winpigler** - *NIST Firefighter/EMT-B*

PSCR

2017
PUBLIC SAFETY BROADBAND
STAKEHOLDER MEETING

Marriott Rivercenter | San Antonio, TX

DAY 2
TUESDAY, JUNE 13TH

#PSCR2017

AGENDA

3:00PM—4:00PM	**BREAK - Grantee Poster Room/PSCR Demo Tables**

4:00PM—5:00PM

OPTION 1: Public Safety Identity Management (Located in Salon I)
A tutorial on PSCR's research into Identity, Credentialing, Access Management (ICAM), and Mobile Single Sign-on (SSO)

John Beltz - *PSCR Security*
Paul Grassi - *NIST National Strategy for Trusted Identities in Cyberspace (NSTIC)/PSCR*
Bill Fisher - *NIST National Cybersecurity Center of Excellence (NCCoE)*
Arshad Noor - *StrongAuth, Inc*
Mike Korus - *Motorola Systems Cyber Security Organization*
John Bradley - *Ping Identity*

OPTION 2: Location-Based Services Discussion Forum (Located in Salon M)
We want to hear your operational needs and technical approaches to LBS technologies

Dave Howe - *NIST Physical Measurement Laboratory (PML)/PSCR*
Fabio da Silva - *NIST Physical Measurement Laboratory (PML)/PSCR*
Jeb Benson - *PSCR Technology Acceleration & External Research Group*

OPTION 3: Grantee Poster Room/PSCR Demo Tables

5:00PM—6:00PM

OPTION 1: Join the PSCR Security Community (Located in Salon I)
Q&A session on topics of your choosing within PSCR security research

John Beltz - *PSCR Security*
Josh Franklin - *NIST Information Technology Laboratory (ITL)/PSCR*
Michael Ogata - *NIST Information Technology Laboratory (ITL)/PSCR*
Mike Bartock - *NIST Information Technology Laboratory (ITL)/PSCR*

OPTION 2: 3 Questions about your Communication Experiences (Located in Salon M)
10 Minutes of Your Time – Drop In, Answer 3 Questions, and Win Prizes

Mary Theofanos - *NIST Material Measurement Laboratory (MML)/PSCR*
Yee-Yin Choong - *NIST Information Technology Laboratory (ITL)/PSCR*
Kristen Greene - *NIST Information Technology Laboratory (ITL)/PSCR*
Shanee Dawkins - *NIST Information Technology Laboratory (ITL)/PSCR*

OPTION 3: Grantee Poster Room/PSCR Demo Tables

DAY 3
WEDNESDAY, JUNE 14TH

All sessions to take place in the Salon I Conference Room

AGENDA

Time	Session
8:00AM—8:30AM	**Day 3 Keynote** **Jeff Johnson** - *FirstNet Board Vice Chairman & Retired Fire Chief*
8:30AM—10:00AM	**Advancing Location-Based Services & Resilient System Technologies Through PSCR's Innovation Accelerator Grant Program** **Moderator: Jeb Benson** - *PSCR Technology Acceleration & External Research Group* **Moderator: Eric Anderson** - *PSCR Technology Acceleration & External Research Group* **Carol Politi** - *TRX Systems, Inc.* **Anthony Rowe** - *Carnegie Mellon University* **Niki Trigoni** - *University of Oxford* **Andrei Shkel** - *University of California - Irvine* **Harsha Chenji** - *Texas A&M Engineering Experiments Station* **Rajarathnam Chandramouli** - *Misram LLC dba Spectronn* **Nancy French** - *Michigan Technological University* **Murat Yuskel** - *University of California - Riverside*
10:00AM—10:30AM	**BREAK**
10:30AM—11:30AM	**Taking The Network Wherever You Go** *Deployable Systems Research for Public Safety* **Ben Posthuma** - *PSCR Capabilities & Integration Group*
11:30AM—12:00PM	**Making the Most of Image and Video Quality** **Margaret Pinson** - *NTIA Institute for Telecommunications Sciences (ITS)/PSCR*
12:00PM—12:30PM	**Closing Remarks** **Dereck Orr** - *Acting NIST CTL Lab Director & PSCR Division Chief*
12:30PM—1:30PM	**PSCR VR Demo Room**

SESSION DESCRIPTIONS

Public Safety Mission Critical Voice
Latest research plans and results from PSCR

First responders operate in very challenging environments where access to communications infrastructure can be limited or even non-existent. Device-to-Device (D2D) communication will be an essential enabler for first responders in the future as it helps them to retain uninterrupted contact. D2D-enabled user devices will allow users to communicate directly with each other without sending traffic through a base station, which is a critical capability in environments where the wireless network is degraded or destroyed. During this session, PSCR will give an overview of the March 2017 Mission Critical Voice (MCV) Roundtable that focused on defining a quality of experience framework for public safety mission critical voice. We'll also provide an overview of the out-of-coverage capabilities defined in 3rd Generation Partnership Project (3GPP) Long Term Evolution (LTE). Additionally, PSCR will discuss topics related to device synchronization, discovery, and communication in the context of 3GPP LTE Proximity Services (ProSe), as well as present our initial analysis of the performance of Mission Critical Push-to-Talk (MCPTT).

Advancing Mission Critical Voice Technologies Through PSCR's Innovation Accelerator Grant Program

This panel discussion will highlight how several Public Safety Innovation Accelerator Program (PSIAP) grant recipients plan to conduct Mission Critical Voice-focused research that will advance first responder communications and operations through innovative R&D projects.

Indoor Location-Based Services for Public Safety
PSCR research plans and current findings

Location-based Services represent one of PSCR's primary research priorities; during this session PSCR will present on several key aspects of this topic area, including: the primary goals of current 3D-localization studies as well as the expected benefits gained from these activities; the problem of 3D indoor localization that is specific to public safety operations and a set of baseline requirements; the perceived pros and cons of current localization methods; and results from three recent technology scouting efforts related to indoor localization, mapping, and navigation. This session will provide important context for the Day 2 breakout session on Location-Based Services (LBS).

Advancing Public Safety Analytics Through PSCR's Innovation Accelerator Grant Program

This panel discussion will highlight how several Public Safety Innovation Accelerator Program (PSIAP) grant recipients hope to advance first responder communications and operations through targeted research and development focused on Public Safety Analytics.

Public Safety Communications Security
Update on current projects from the PSCR Security team

Security is a foundational aspect of all public safety communications. Network architecture, LTE components, mobile devices and the applications they support, and the first responder users are all part of the security ecosystem. The PSCR Security team researches these important subjects to help ensure current and future public safety communications users and providers have the knowledge and tools to implement proper security. This panel will provide an overview of the important research being conducted by the PSCR Security team, highlighting how this research will benefit all of our stakeholders. Topics will include Network Security, Mobile Single Sign On (SSO), Mobile Application Vetting, Mobile Device and Wearable Security, and Over The Air (OTA) Updates to UICC.

How Crowdsourcing can Drive Open Innovation
An overview of PSCR's Open Innovation Program

Open Innovation has proven to be a powerful mechanism to accelerate innovation and technological advancements. This session will provide an overview of the PSCR Open Innovation program and how open innovation methodologies, such as prize competitions, engage a broad and diverse community from around the world to contribute solutions and accelerate the development of critical public safety communications technologies.

Public Safety LTE goes Global
An update from international partners on their public safety LTE deployments

This panel provides a unique opportunity to hear from government representatives from the United Kingdom, European Union, and Canada on the status of their public safety LTE deployment initiatives. Although each country and region are pursuing LTE as the principal technology for their public safety broadband deployments, individual implementations are not always the same. This panel will present an update on these exciting initiatives and will provide insight into the larger, global public safety LTE environment.

The FirstNet & AT&T Partnership: Priorities & Progress

Learn more about FirstNet's network deployment directly from key FirstNet and AT&T leadership. This panel will include presentations on topics such as state plans, FirstNet's core network, priority and preemption, and innovation and test lab. There will also be a Q&A session at the end for the audience to participate and ask questions.

The Public Safety User Interfaces of Tomorrow
An overview of the recently published technology roadmap

Augmented reality smart suits, gesture recognition sensors, eye-gaze data inputs….User Interface technology is developing on a rapid timeline and with it, public safety stands to realize revolutionary new means of interacting with data/communications. Built with the end user in mind, these new interfaces will enable public safety to more seamlessly interact with technology systems, gain critical situational awareness, and realize new methods to carry out tasks. This session will include a review of the PSCR Public Safety User Interface Technology R&D Roadmap and discuss plans for the upcoming User Interface Summit in Boulder, CO.

A User Driven Approach to Identifying Communications and Data Needs from Station to Scene
An in-depth look at PSCR's Usability Research

User experience is a unique and crucial element that is relevant to almost all of PSCR's R&D efforts. It is critical to consider technology as a two-way relationship where the system and users are partners with the same goal. To this end, PSCR is capturing user roles, tasks, and information needs directly from first responders in the field. Interim research results are useful to current and future PSCR stakeholders and research partners and this effort will ultimately result in a user interface evaluation methodology and test environment specification. During this session, the NIST Usability Research Team will present a snapshot of its work with first responders, findings to date, and future plans.

Public Safety Identity Management
A tutorial on PSCR's research into Identity

Credentialing and Access Management (ICAM) and Mobile Single Sign-on (SSO)PSCR has partnered with NIST's Information Technology Laboratory (ITL) and the National Cybersecurity Center of Excellence (NCCoE) to research Mobile Application Single Sign On (SSO) capabilities for first responders. During this session, NIST researchers and representatives from industry will describe their innovative approach in providing these capabilities along with other important public safety identity management topics. This forum will also provide attendees an opportunity for in-depth discussions with researchers and experts in this field.

Location-Based Services Discussion Forum
We want to hear your operational needs and technical approaches to LBS technologies

Indoor localization is undoubtedly one of the most talked about aspects of advanced Location-based Services for public safety. There are various technical approaches, however, to determining indoor localization. This session will serve as an open forum to discuss both the technical approaches to developing Location-Based Services (LBS) technology and the operational needs of the public safety officials using LBS solutions on the ground. Specifically, the technical discussion will focus on the obstacles to obtaining the needed accuracy and speed in determining mission-critical indoor localization of first responders. The technical approach forum and the operational needs forum will run side-by-side during the session, so join this breakout session and lend your input where it's best suited. We hope to provide all attendees with a better understanding of technical approaches to LBS most likely to succeed, as well as an understanding of the obstacles on the road to public safety's LBS goals.

Join the PSCR Security Community
Q&A session on topics of your choosing within PSCR security research

This discussion-based panel will invite attendees to shape and participate in the PSCR Security community. PSCR historically hosts roundtables and summits to gather input from stakeholders in other important topic areas including MCV, LBS, Analytics, and UI/UX and PSCR hopes to incorporate the security community in a similar way. PSCR will poll the conference attendees throughout the conference to determine interest in joining the PSCR Security Community group and also evaluate the best communication paths for that group. We will spend a few minutes in this session discussing the outcomes of the polls and provide a path forward to host this new security group. Additionally, we will host an informal security panel to engage the audience in a discussion around the research areas that were presented during the Day 1 PSCR Security Overview session.

3 Questions about your Communication Experiences
10 Minutes of Your Time – Drop In, Answer 3 Questions, and Win Prizes

The PSCR NIST Usability Team needs your help! Provide 10 minutes of your time, drop in, answer 3 questions, and win prizes. PSCR wants to hear your experiences with technology in the public safety world. We want to draw on the expertise of PSCR's diverse stakeholder community. Whether you are a first responder or work in other areas of public safety, we want to hear from you! Your technology experiences are valuable to PSCR's usability efforts and will help the team better understand user needs and the context of communication in public safety. If you have time, stay and chat with NIST Usability researchers. Prizes will be drawn every 15 minutes. Winners will be announced during the opening session on Wednesday morning.

Advancing Location-Based Services & Resilient System Technologies Through PSCR's Innovation Accelerator Grant Program

This panel discussion will address how Public Safety Innovation Accelerator Program (PSIAP) grant recipients plan to research Location Based Services and Resilient Systems to advance first responder communications and operations through innovative R&D projects.

Taking The Network Wherever You Go
Deployable Systems Research for Public Safety

Mobile deployable networks will continue to be a significant contributor to large-scale public safety communications networks. While PSCR has been researching the complexities of existing deployable systems for several years, this session focuses on two specific areas. First, we'll overview the prospective research that PSCR is doing with next generation deployable systems. This research involves the establishment of a highly mobile deployed network; an ecosystem where LTE-based networks of all form factors, both in the air and on the ground, can converge seamlessly to provide user mobility across the entire network regardless of agency or affiliation. Methods of intelligent data backhaul, mobile edge computing, and future technology adoption as it applies to the deployed network will also be discussed. The second area we'll cover is the next generation deployable test bed that PSCR has established as a place for stakeholders to collaborate using equipment and processes to develop standardized metrology for evaluating next generation systems.

Making the Most of Image and Video Quality

This session will address how camera innovations can transform the way first responders communicate, visualize live incidents, document past events, and detect danger. PSCR is gathering and analyzing first responder feedback on image quality and video quality gaps. PSCR interviewed more than 100 people, including federal, state, and local agencies; law enforcement, fire, and emergency medicine; rural and urban communities; disparate climates; department sizes from small to very large; district attorneys' offices, manufacturers, instructors, researchers, and public safety organizations. We learned surprisingly consistent themes. Today's cameras were designed for a different task than the first responder's use. They produce suboptimal information and save surplus data. First responders need cameras that are designed for their tasks. A camera designed to be a law enforcement tool must meet the legal needs of the court and the investigatory needs of the detectives. A live video communication system designed to be telemedicine tool must meet the physician's need to diagnose the patient. This session will provide a glimpse into 48 camera technology gaps identified by PSCR and what future generation camera systems could look like. PSCR invites first responders to share ideas with us at the Usability booth, by phone or by email. Each person we speak to provides us with new insights.

Speaker Biographies

Mike Bartock

Session: Join the PSCR Security Community

Mike Bartock is an IT specialist in the Computer Security Division in the Information Technology Laboratory at the National Institute of Standards and Technology. He performs applied cybersecurity research specializing in hardware roots of trust to enforce policy-based cloud workload migration, LTE backhaul protection, and derived PIV credentials. His work focuses on collaborating with industry partners to build and implement proof of concept reference architectures. He has experience in managing virtualized environment, cloud computing, software development, cryptography, derived PIV credentials, and LTE security for public safety networks. He received his Bachelor's in Mathematics from the University of Maryland.

John Beltz

Sessions: Public Safety Communications Security Update on current projects from the PSCR Security team

Public Safety Identity Management: A tutorial on PSCR's research into Identity, Credentialing, Access Management (ICAM), and Mobile Single Sign-on (SSO)

Join the PSCR Security Community: Q&A session on topics of your choosing within PSCR security research

John has been the IT Security Manager at PSCR for two years. He leads all security specific research projects and provides security consulting for PSCR projects that are not security focused. He is also responsible for the security protection of the PSCR Demonstration Network. John's background is in network security where his role before joining PSCR was managing security teams at NIST in completing A&A activities including project management, security architecture consultation, documentation development/review, asset inventory analysis, network and web application vulnerability scanning and analysis, and hands-on technical testing. Prior to that he performed similar services as a consultant with Booz Allen Hamilton based in McLean, VA. John is a proud veteran of the US Army where he served his country for 6 years. During his military career he also completed his Bachelor's Degree at Hawaii Pacific University majoring in Computer Information Systems and later completed a Graduate Degree at Johns Hopkins University majoring in Information and Telecommunication Systems. John is a native of the Washington, DC area, but now lives in Colorado with his wife and two year old son. He enjoys playing in the Rocky Mountains at his favorite pastimes including mountain biking, backcountry skiing, and hiking.

Jeb Benson

Session(s): Public Safety Mission Critical Voice Latest research plans and results from PSCR

Location-Based Services Discussion Forum: We want to hear your operational needs and technical approaches to LBS technologies

Prior to joining PSCR in January 2016, Jeb Benson had 10 years of experience as an RF Engineer and Engineering Manager with the Department of Defense researching, developing, and fielding products and systems for ISR applications. Prior to that he worked for five years as a Research Biologist in Alaska. Jeb has a BS in Electrical and Computer Engineering from the University of Alaska-Fairbanks, and a BS in Environmental Science from Oregon State University. He is also a licensed Professional Engineer and a

DAWIA certified Level 2 Science and Technology Manager.

John Bradley

Session: Public Safety Identity Management: A tutorial on PSCR's research into Identity

Mr. Bradley (Ping Identity) is an Identity Management subject matter expert and IT professional with a diverse background. Mr. Bradley has over 15 years experience in the information technology and identity management field. Mr. Bradley advises Government Agencies and commercial organizations on the policy and technical requirements of Identity Management, Federated Identity, PKI and smart card solutions. Mr. Bradley communicates effectively with clients, vendors, staff and standards organizations to brief them on complex state-of-the-art identity management concepts, best practices, and technical requirements. He is also Chair of the Federation Interoperability WG at Kantara. He is treasurer of the openID Foundation, on the advisory board for OIX, and an active contributor to SAML and other OASIS specifications at OASIS. . Mr. Bradley is one of the leaders of OSIS, and the Kantara Interoperability Review Board, forums that vendors use for industry interoperability testing, and thus has an in-depth understanding not only of the factors that contribute to success, but of upcoming trends that affect whether strategic planning will ensure optimal effectiveness for future operability. Recently John has been co-authoring the ICAM protocol profiles at Protiviti Government Services on behalf of GSA, and continues to support the FICAM interoperability Lab. Current projects include co-authoring the next version of the openID specification and related standards.

Jeff Bratcher

Session: The FirstNet & AT&T Partnership: Priorities and Progress

Mr. Bratcher spent his early career in the private sector at Motorola Cellular and Siemens Mobile in their respective cellular field deployment engineering teams in domestic and international markets. Mr. Bratcher began his federal service in 2003 when he joined the National Telecommunications and Information Administration (NTIA) Institute for Telecommunication Sciences (ITS) located in Boulder, Colorado. Prior to joining FirstNet, Mr. Bratcher served as Division Chief for the Telecommunications and IT Planning Division at the ITS and also served as the Technical and Operations Manager for the Public Safety Communications Research (PSCR) program. Mr. Bratcher received a BS in Electrical Engineering from Texas Tech University and a MS in Telecommunications from Southern Methodist University.

Jeff Cichonski

Session: Public Safety Communications Security: Update on current projects from the PSCR Security team

Jeff Cichonski is an Information Technology Specialist working with a broad array of technologies at the National Institute of Standards and Technology; working in the Applied Cybersecurity Division under the umbrella of the Information Technology Laboratory. One of his current areas of focus is LTE network security, with a specific interest in security for public safety LTE Implementations. Other areas of research include cybersecurity for industrial control systems (ICS), internet of things (IoT) security and, derived credential research. He has a Bachelor of Science from the Pennsylvania State University.

Yee-Yin Choong

Session(s): A User Driven Approach to Identifying Communications & Data Needs from Station to Scene: An in-depth look at PSCR's Usability Research

3 Questions about your Communication Experiences: 10 Minutes of Your Time – Drop In, Answer 3 Questions, and Win Prizes

Yee-Yin Choong is a Human Factors Scientist in the Information Technology Laboratory at the National Institute of Standards and Technology (NIST). Yee-Yin conducts research in the areas of user-centered design and evaluation methodology, public safety communications, usable cybersecurity, biometrics usability, human factors, and cognitive engineering. She has contributed to numerous papers, book chapters and conferences on the topics of user-

centered design and evaluation, cross-cultural usability, symbols and icons design, biometrics symbology, and usable cybersecurity.

Prior to joining NIST in 2006, she practiced usability engineering in the private sector for 10 years. Her work covered areas including telecommunications, Business-to-Business eCommerce, Web-based applications, and software internationalization. Yee-Yin received her MS degree in Industrial Engineering from the Pennsylvania State University and her PhD in Human Factors from Purdue University.

Shanee Dawkins

Sessions: A User Driven Approach to Identifying Communications & Data Needs from Station to Scene: An in-depth look at PSCR's Usability Research

3 Questions about your Communication Experiences: 10 Minutes of Your Time – Drop In: Answer 3 Questions, and Win Prizes

Dr. Shaneé Dawkins is a Computer Scientist in the Visualization and Usability Group at the National Institute of Standards and Technology (NIST). She is an experienced researcher in the fields of human computer interaction and human centered design. For over 10 years, Shaneé worked towards the improvement of usable and accessible designs of voting systems.

At NIST since 2012, Shaneé performs research focusing on human centered design and evaluation guidelines and standards. She has contributed to NIST's efforts in developing usability and accessibility standards of United States voting systems, improving the evaluation of machine translation technologies, and is currently a researcher on the public safety usability team. Shaneé received her M.S. and Ph.D. in Computer Science at Auburn University, and B.S. in Computer Engineering at North Carolina A&T State University.

Fabio da Silva

Sessions: Indoor Location-Based Services for Public Safety PSCR research plans and current findings

Location-Based Services Discussion Forum: We want to hear your operational needs and technical approaches to LBS technologies

Physicist with extensive experience in electromagnetic measurements (dc to 20 GHz), magnetism and magnetic materials, microfabrication, and quantum information sciences. He joined the Time and Frequency Metrology Group at NIST in 2016 and is now investigating radiofrequency and vapor-cell magnetometry technologies applied to the problem of indoor location and communication in shielded, cluttered, and extreme temperature, shock, and vibration environments.

Brienne Engel

Session: Indoor Location-Based Services for Public Safety: PSCR research plans and current findings

Brienne has been with yet2 since 2015 and works primarily on Technology Scouting Services, Strategic Dealflow Services and Innovation Tours. During her time at yet2, Brienne has worked extensively with stakeholders across Fortune 500 companies and Government organizations across several industry sectors to evaluate partnership opportunities, identify and analyze technologies and foster collaborations. Brienne has a diverse scientific background with B.S. degrees in Biology and Biochemistry from Brandeis University, an M.S. in Biological Oceanography from University of South Florida, and a Ph.D. in Cancer Biology from University of South Florida in conjunction with the Moffitt Cancer Center.

Heather Evans

Session: How Crowdsourcing can Drive Open Innovation: An overview of PSCR's Open Innovation Program

Dr. Heather Evans is senior program analyst in the Program Coordination Office in the Director's Office at the National Institute of Standards and Technology (NIST). She covers policy and strategy issues for NIST in many areas including nanotechnology, bioscience, advanced manufacturing, and open innovation. Heather managed NIST's first-ever app competition, the Reference Data Challenge, which offered cash prizes to incentivize the creation of apps using NIST data. She serves as a mentor in the GSA Challenge Mentor program and leads the NISTwide community of interest in prizes and challenges. Also in summer of 2015, Heather coordinated NIST's participation in the first-ever National Maker Faire, an event that attracted makers from across the country. As part of the Department of Commerce Executive Leadership Development Program, Heather served a detail assignment in the NASA Administrator's Office of Strategy Formulation. Prior to working at NIST, Heather covered emerging technology issues at the White House Office of Science and Technology Policy and the National Nanotechnology Coordination Office as an AAAS Science and Technology Policy Fellow. Heather was a Humboldt Postdoctoral Research Fellow at the Max Planck Institute for Dynamics and Self-Organization in Gottingen, Germany, and earned her doctorate in materials science from the University of California Santa Barbara.

Alicia Evangelista

Session: Indoor Location-Based Services for Public Safet: PSCR research plans and current findings

Alicia has been with yet2 since 2014 and works with clients across a number of Open Innovation services. During her time at yet2, Alicia has led several search efforts with the EPA, NASA, NIST to identify opportunities for technology partnerships, landscape opportunity spaces and provide insight for RFIs, RFPs and BAAs. Prior to joining yet2, Alicia worked for the National Institutes of Health as a Technology Transfer Associate. Alicia received her PhD in Molecular Medicine from Boston University and her B.S. from the University of Virginia, where she studied Biomedical Engineering.

Ryan Felts

Session: The Public Safety User Interfaces of Tomorrow: An overview of the recently published technology roadmap

Ryan is a Principal Consultant with Corner Alliance, Inc. Since 2012, Ryan has supported PSCR in the development of R&D Technology Roadmaps and is co-author of the Location-based Services R&D Roadmap, Public Safety Analytics R&D Roadmap, and Public Safety User Interface R&D Roadmap. In addition to supporting PSCR, Ryan has supported the Department of Homeland Security Office of Emergency Communications (OEC) and Science & Technology (S&T) Directorate, and the Department of Commerce, National Telecommunications & Information Administration (NTIA) and National Institute of Standards and Technology (NIST). Prior to joining Corner Alliance, Ryan was a Senior Consultant with Touchstone Consulting. From 2007-2012 Ryan supported OEC and the management of the SAFECOM program and supported the development of the Communications Unit Leader (COML) and Communications Technician (COMT) training programs and the State of Texas and Commonwealth of Virginia in broadband and interoperability planning related efforts. Ryan received a Bachelor of Arts in Communication from Virginia Tech.

Bill Fisher

Session(s): Public Safety Identity Management: A tutorial on PSCR's research into Identity, Credentialing, Access Management (ICAM), and Mobile Single Sign-on (SSO)

Bill Fisher is a security engineer at the National Cybersecurity Center of Excellence (NCCoE). In this role, he is responsible for leading a team of engineers that work collaboratively with industry partners to address cybersecurity business challenges

facing the nation. He leads the center's Attribute Based Access Control (ABAC) project, Mobile Application Single Sign On (SSO) for the Public Safety and First Responder Sector, and is part of the ITL Cybersecurity for IoT program.

The NCCoE is a collaborative hub where businesses, government agencies, and academia work together to address broad cybersecurity problems of national importance. As part of the National Institute of Standards and Technology, the NCCoE uses standards, best practices, and commercially available secure technologies to demonstrate how cybersecurity can be applied in the real world. Ultimately, the NCCoE helps promote widespread adoption of cybersecurity technologies by developing example solutions to cybersecurity problems that affect whole sectors of industry, or even multiple sectors.

Prior to his work at the NCCoE, Mr. Fisher was a program security advisor for the System High Corporation in support of the Network Security Deployment division at the Department of Homeland Security. He holds a bachelor's degree in business administration from American University and a master's degree in cybersecurity from Johns Hopkins University.

Joe Fournier

Session:Public Safety LTE goes Global: An update from international partners on their public safety LTE deployments

Joe has 28 years of experience in the wireless domain working on product, system and network level research & development. He is currently with the Federal Government's Centre for Security Science (CSS) in Ottawa, Canada responsible for the Wireless Technology portfolio. Prior to this, he led the wireless network design group at the Communications Research Centre (CRC) at Innovation Science and Economic Development.

Before joining the federal government, Joe held senior technical and management positions at a number of Industry organizations including Intelcan, Newbridge Networks and Alcatel Networks. While at Alcatel, Joe was Associate Vice President of Broadband Wireless. Over his career, he has been involved with many turnkey wireless network designs and implementations in North and South America, the Caribbean, Europe, Africa and Asia.

Josh Franklin

Session: Join the PSCR Security Community: Q&A session on topics of your choosing within PSCR security research

Joshua is an IT Security Engineer at the National Institute of Standards and Technology (NIST) focusing on secure mobility for both the public and private sectors. He manages the mobile security laboratory at the National Cybersecurity Center of Excellence (NCCoE), and is actively working to update federal guidance on using mobile devices in the enterprise. In the pursuit of secure telecommunications, Joshua co-authored NIST's security analysis of LTE, and participated in 3GPP and the FCC's Working Group on SS7 Security. Joshua is the principle investigator for PSCR's effort in securing Band 14 devices and wearables.

Prior to joining NIST in 2012, Joshua worked at the U.S. Election Assistance Commission where he gathered extensive experience with voting technologies and testing and certification programs. Joshua graduated from Kennesaw State University with a Bachelor's of Science in Information Systems, and he received a Master's of Science in Information Security and Assurance from George Mason University.

John Garofolo

Session: Advancing Public Safety Analytics Through PSCR's Innovation Accelerator Grant Program

John Garofolo has been with the National Institute of Standards and Technology (NIST) Information Technology Laboratory since 1987 leading the development of human language-, computer vision-, and multimedia technology research and evaluation activities. He now provides senior leadership for the development of new research and measurement science programs focused on unstructured data analytic technology challenges, especially in the area of video analytics. He brings his knowledge of rigorous measurement science, data- and evaluation-driven research, and an interdisciplinary perspective to bear to bring diverse communities of interest together to create innovative approaches to the development of next-generation analytic technologies that address critically important national needs. He is also an expert in R&D strategic planning and has led the NIST Information Technology Laboratory and other agencies in applying best practices in conjunction with an understanding of the state-of-the-art, trends, and emerging technologies in developing their R&D strategies. Over the last 10 years, he has worked in developing test and measurement methods, tools, and data for a variety of emerging video analytic technologies. In 2010, he co-developed the VISITORS program and symposium to bring the computer vision research community together with the retail loss prevention community to discuss how video analytics could be brought to bear to address the fast-growing shoplifting problem. In 2010, he created the ALADDIN video and multimedia analytics R&D program at ODNI IARPA to create video/audio understanding technology with search-engine-like capabilities to assist analysts in triaging enormous amounts of unconstrained video clips. In 2012-2013, he brought attention to the need for technologies to address the fast-growing physical security video area with a strategic discussion and workshop focused on the development of technology to analyze the data from massive networks of CCTV cameras. In 2014, he created and continues to lead the OSTP NITRD Video and Image Analytics (VIA) Interagency Working Group which is focused on both developing Federal interagency strategy for video and image analysis technology R&D and fostering collaboration across agencies and with state and local governments. In leading VIA, he recognized the surge of needs related to video in public safety. He is now working with the public safety community to develop a community strategy for R&D, collaboration, measurement, standards related to video analytics. He is an active participant in the NIST Public Safety Communications Research Program, the NIST/DoJ-led Forensic Science "OSAC" Program, the DHS-led Video Quality in Public Safety Program, the Underwriters Labs Technical Panel on Tactical Camera Standards, and the National Public Safety Telecommunications Council Video Technology Advisory Group.

Paul Grassi

Session: Public Safety Identity Management: A tutorial on PSCR's research into Identity, Credentialing, Access Management (ICAM), and Mobile Single Sign-on (SSO)

Paul Grassi is the Senior Standards and Technology Advisor at the National Institute of Standards and Technology (NIST). He joined NIST in June 2014 to advance and accelerate the development and adoption of identity authentication and authorization related standards and technologies needed to implement the identity ecosystem envisioned in the National Strategy for Trusted Identities in Cyberspace (NSTIC). Mr. Grassi comes to NIST with a broad background of technology and management consulting, and significant experience developing enterprise security strategies and systems, having served a range of Fortune 500 companies, as well as domestic and foreign governments.

Kristen Greene

Sessions: A User Driven Approach to Identifying Communications & Data Needs from Station to Scene: An in-depth look at PSCR's Usability Research;

3 Questions about your Communication Experiences: 10 Minutes of Your Time – Drop In Answer 3 Questions, and Win Prizes

Kristen Greene is a Cognitive Scientist in the Visualization and Usability Group within the Information Technology Laboratory at the National Institute of Standards and Technology (NIST). She conducts usability and human factors research for NIST's PSCR (Public Safety Communications Research) and usable cybersecurity programs. She has an M.A. and Ph.D. in Cognitive Psychology from Rice University. She is an experienced research scientist, having conducted research in the Attention and Perception Laboratory at the University of South Carolina, the Usability Testing and Analysis Facility at NASA Johnson Space Center, the Computer Human Interaction Laboratory at Rice University, and now the Information Technology Laboratory at NIST. She is broadly interested in understanding how changing next-generation technologies, especially mobile devices, impact human cognition and total human-system performance.

David Griffith

Session: Public Safety Mission Critical Voice: Latest research plans and results from PSCR

David Griffith is a member of the Wireless Networks Division in the Communications Technology Laboratory (CTL) at the National Institute of Standards and Technology (NIST). His research focus is on developing mathematical models for wireless communications systems, including analyzing control processes for Device-to-Device (D2D) communications. He also has supported NIST's research on wireless communications for the Smart Grid, and has modeled architectures for optical networks that aimed to improve the reliability of data flows over large backbone links. His prior experience includes systems engineering and performance modeling for satellite communications networks for a number of companies. He earned the PhD in electrical engineering at the University of Delaware, where his work focused on adaptive non-linear signal processing techniques, such as developing time-frequency representations for signals corrupted by impulsive noise.

Dave Howe

Session: Location-Based Services Discussion Forum: We want to hear your operational needs and technical approaches to LBS technologies

Leader of the Time and Frequency Metrology Group of the National Institute of Standards and Technology (NIST), Boulder, CO. He has extensive experience in atomic clocks, precise synchronization, navigation using radio and laser ranging, signal processing, and position, navigation, and timing (PNT) using GPS and other services. His expertise includes spectral estimation using digital processing techniques, spectral purity and noise analysis, digital servo design, automated accuracy evaluation of primary cesium standards, atomic beam analysis, reduction of oscillator acceleration sensitivity for special applications, and time series analysis.

Gema Howell

Session: Public Safety Communications Security: Update on current projects from the PSCR Security team

Gema Howell is an IT Security Engineer at the National Institute of Standards and Technology (NIST). Gema currently researches methods to secure Band 14 devices and wearables tailored to public safety. Prior to this effort, Gema researched mobile isolation systems and mobile application vetting solutions for public safety. Outside of mobile security, Gema actively participates in the development of standardization for voting systems. Gema has a Bachelor's of Science in Computer Technology: Network Security from Bowie State University and is currently attending the University of Maryland, Baltimore County, to receive her Master's of Professional Studies in Cybersecurity.

Jeff Johnson

Session: Day 3 Keynote

Jeffrey Johnson has an extensive public safety background, with broad experience at both the local and national level. Chief Johnson served as Chair of Oregon's Statewide

Interoperability Executive Council, which is transitioning from four independent state-owned radio networks into a single interoperable modern voice and data network. Prior to that, Chief Johnson was the Tualatin Valley Fire & Rescue Fire Chief/CEO for 15 years. Chief Johnson is very active nationally on public safety communications matters, and has served on the International Association of Fire Chiefs (IAFC) Board of Directors and served as President and Chairman of the Board. He is now CEO of the Western Fire Chiefs Association and served as a representative of the SAFECOM Emergency Response Council. Chief Johnson is a graduate of Concordia University.

Jason Kahn

Session: Public Safety LTE goes Global: An update from international partners on their public safety LTE deployments

Jason Kahn is a research engineer for the Public Safety Research (PSCR) division of the Communication Technology Laboratory (CTL) within NIST. Jason transitioned to PSCR from the private industry in December 2015. Jason started his career in telecommunications by earning a Bachelor of Science in Electrical Engineering from the University of Texas at Austin in 1997. After graduation, Jason worked for Motorola, where he specialized in interoperability between mobile devices and telecommunications networks. While working on 2G and 3G wireless technologies, Jason also participated in standards development within the 3GPP2 while earning a Master of Science in Engineering Management with a concentration in operations research from SMU. After moving to Nokia in 2011, Jason focused on 4G LTE wireless technologies. Today, among his many duties, Jason is involved in public safety testing standards for LTE within the 3GPP.

Mike Korus

Session: Public Safety Identity Management: A tutorial on PSCR's research into Identity, Credentialing, Access Management (ICAM), and Mobile Single Sign-on (SSO)

Mike Korus (Motorola Solutions) has 30 years experience in public safety communications. He has held numerous engineering and management roles with Motorola Solutions and is currently part of Motorola's Chief Technology Office cyber security organization, leading multi factor authentication research. Mike is currently driving the company's efforts to lower user friction associated with multifactor authentication. Mike has a Bachelor's degree in Electrical Engineering from the University of Minnesota, a Master's degree in Computer Engineering from the Illinois Institute of Technology, is a Motorola Science Advisory Board Associate, and currently holds 44 issued patents

Marc Leh

Session: The Public Safety User Interfaces of Tomorrow: An overview of the recently published technology roadmap

Marc Leh is a Consultant for Corner Alliance who was supported PSCR's R&D Strategy since 2014. Marc was a lead author for the PSCR's Location-based Services Roadmap, Public Safety Analytics Roadmap, User Interface Roadmap, and organizes a variety of working groups relating to public safety technology and the telecommunications industry. Prior to joining Corner Alliance, Marc received his B.A. in History from Cornell University.

David Lund

Session: Public Safety LTE goes Global: An update from international partners on their public safety LTE deployments

Dr David Lund is Past President of Public Safety Communications Europe (PSCE) Forum.

David's experience in Public Safety Communications dates back to the 1990's where involvement in research projects lead to demonstrations of medical telemetry and multimedia over the first implementations of circuit switched TETRA, winning the most innovative application award at the 2001 TETRA World Congress. David was an active contributor to the TETRA standards as ETSI special task force expert on many occasions covering aspects of coding, modulation, RF extension down to VHF and definition of the

Multimedia Exchange layer (MEX) layer.

In recent years his research has led to interest in the wider deployment aspects of mobile networks with a key focus towards solving problems across the layers of interoperability - the major problem of moving beyond technological interoperability, through solving problems of informational interoperability, through to aligned operations, strategy and changing European Legislation.

David is coordinator of project BroadMap, a key activity aiming to define the requirements for procurement of European Interoperable broadband applications/ services, networks and devices for PPDR.

Arshad Noor

Session: Public Safety Identity Management: A tutorial on PSCR's research into Identity, Credentialing, Access Management (ICAM), and Mobile Single Sign-on (SSO)

Arshad Noor is the CTO of StrongAuth, Inc., a Silicon Valley company focused on data-protection through encryption and strong-authentication. He has been working for over 30 years in the IT sector, for companies such as the Port Authority of NY and NJ, New York Life Insurance, BASF Corporation, Citibank and Sun Microsystems. In the last 20 years, he has focused on the use of cryptography to address security problems and has created open-source solutions that solve data-security problems for customers on six continents. He has been involved in many standards efforts in the past, including the FIDO Alliance, most recently, to simplify the use of FIDO protocols for strong-authentication. Arshad has authored many technical papers and spoken at conferences around the world on the subject of data-protection and strong-authentication.

Michael Ogata

Sessions: Public Safety Communications Security: Update on current projects from the PSCR Security team

Join the PSCR Security Community: Q&A session on topics of your choosing within PSCR security research

Michael Ogata has worked for the National Institute of Standards and Technology(NIST) since 2005. Michael is currently serving as Co-Lead for the PSCR Cybersecurity group. He is also lead on the mobile application security research efforts being undertaken by PSCR. For the past 4 years, Michael has worked closely with members of the public safety community to explore mobile application concerns unique to that audience. In addition to his public safety work, his other roles at NIST revolve around digital forensics, specializing in mobile application forensics. Michael has a Bachelor of Science in Computer Science from the University of Maryland, Baltimore County.

Dereck Orr

Sessions: Welcome & Kick Off

The FirstNet & AT&T Partnership: Priorities & Progress

The Public Safety User Interfaces of Tomorrow: An overview of the recently published technology roadmap

Closing Remarks

Dereck Orr is the Acting Director for the Communication Technology Laboratory (CTL). He is also the Division Chief for the Public Safety Communications Research Division at NIST's Communication Technology Laboratory, and has held that position since December 2002. In that role, he leads the Public Safety Communications Research (PSCR) program that serves as an objective technical advisor and laboratory to FirstNet, the Department of Homeland Security, and public safety to accelerate the adoption and implementation of the most critical public safety communication standards and technologies. From October 2003 until October 2004, Mr. Orr was detailed to the Department of Homeland

Security to serve as the Chief of Staff of the SAFECOM Office within the Science and Technology Directorate, to help establish the new program. Prior to working at NIST, Mr. Orr served as a professional staff member of the Senate Appropriations Subcommittee for the Departments of Commerce, Justice, and State, and Related Agencies under Senator Fritz Hollings. In that position, Mr. Orr was responsible for the appropriations accounts relating to state and local law enforcement issues. Prior to that, Mr. Orr served four years at the Office of Community Oriented Policing Services (COPS) at the Department of Justice. Mr. Orr received a Masters in Public Policy from the College of William and Mary and a Bachelor of Arts in American History from the University of Texas at Austin.

Salim Patel

Session: The FirstNet & AT&T Partnership: Priorities & Progress

Director, Technology Architecture and Planning AT&T

Salim leads a team of architects responsible for FirstNet Architecture and Planning at AT&T. He has over 22 years of experience in leading cross functional teams in wireless network engineering, solutions architecture and service realization.

Salim holds an MSEE in Communication Systems and an MBA from the University of Southern California. He is also a Certified Information Systems Security Professional (CISSP).

Margaret Pinson

Session: Making the Most of Image and Video Quality

Margaret Pinson received her B.S. and M.S. degrees in computer science from the University of Colorado at Boulder in 1988 and 1990. Since 1988, she has been investigating improved methods for assessing video quality at the Institute for Telecommunication Sciences, an office of the National Telecommunication and Information Administration (NTIA/ITS), in Boulder, Colorado.

Mrs. Pinson is a Co-Chair of the Video Quality Experts Group (VQEG) and the administrator of the Consumer Digital Video Library (www.cdvl.org). She received the best paper award at the 2014 Workshop on Quality of Multimedia Experience (QoMEX) for a proposed model of rating behavior based on subject bias and subject error. Mrs. Pinson develops automated metrics for assessing the performance of video systems and actively transfers this technology to end users, standards bodies, and U.S. industry.

Ben Posthuma

Session(s):Deployables Systems

Ben began his career as a Communications Electronics Engineer in the United States Marine Corps. There, he gained an appreciation for the demand that communications systems, particularly those relied upon in critical situations, must be robust, dependable, and leverage the best that industry can offer. From there, Ben joined a major defense contractor and worked as the flight test director and chief engineer of a research and development group which specialized in rapidly deployable airborne-based networks; networks that were intended to provide communications in denied or austere environments for those who depended on them most. Ben joined NIST in January of 2016 to continue researching methods of bringing critical communications to first responders in any environment and is currently the principal investigator for the deployed system research within the PSCR group.

Sandra Spickard Prettyman

Session: A User Driven Approach to Identifying Communications & Data Needs from Station to Scene: An in-depth look at PSCR's Usability Research

Dr. Sandra Spickard Prettyman is an Independent Research Consultant who specializes in qualitative research methods, providing expertise in designing and implementing

rigorous qualitative research projects. Until recently, she was a Professor at the University of Akron where she taught doctoral courses in research methods and courses in social and philosophical foundations of education for graduate and undergraduate students.

Richard Rouil

Session: Public Safety Mission Critical Voice: Latest research plans and results from PSCR

Richard Rouil is a researcher and project lead working in the Wireless Networks Division at the National Institute of Standards and Technology (NIST). He holds a Ph.D. in Computer Science from Telecom Bretagne, France (2009) that focused on mobility in heterogeneous networks. His main interests include protocol modeling and simulation of communication networks. His current research focuses on evaluating the performance of existing technologies such as Long Term Evolution (LTE) and defining requirements for next generation wireless systems to support the deployment of networks used by Public Safety.

Gordon Shipley

Session: Public Safety LTE goes Global: An update from international partners on their public safety LTE deployments

Gordon Shipley is a Director in the UK Home Office's Crime, Policing and Fire Group (CPFG) in London responsible for the Emergency Service Mobile Communications Programme (ESMCP), which is delivering a critical national voice and broadband data communications service for the police, fire, ambulance and other UK departments and agencies. He is also the senior contract owner for the current service, Airwave, and will be responsible for users' trials and transition from Airwave to the new service, called the Emergency Services Network (ESN).

With a military and technical background and experience in public procurement, Gordon was previously the Head of Systems and Technology at the London Olympic Delivery Authority, responsible for system integration, telecoms and information technology, and for delivering the Olympic Park's integrated security projects. He is also a Senior Commercial Specialist and a Non-Executive Director at the National Records of Scotland in Edinburgh.

Sue Swenson

Session: Day 1 Keynote

Sue Swenson brings extensive experience as a telecommunications and technology executive to the FirstNet Board. She currently serves as CEO and Chair of the Board of Inseego, Corp, a leading global provider of SaaS telematics solutions. She has served as President and CEO of business software provider Sage North America from 2008-2011. Ms. Swenson also served as COO of T-Mobile USA, President and COO of Leap Wireless, International (Cricket Communications) from 1999-2004 and President and CEO of Cellular One from 1994-1999. She started her telecommunications career at Pacific Telesis holding various management roles including President & COO of Pac Tel Cellular from 1990 - 1994. Ms. Swenson serves on the board of Directors of Wells Fargo, Harmonic, and Inseego Corp(formerly Novatel Wireless), where she was appointed CEO in October 2015.

Mary Theofanos

Sessions: A User Driven Approach to Identifying Communications & Data Needs from Station to Scene: An in-depth look at PSCR's Usability Research

3 Questions about your Communication Experiences: 10 Minutes of Your Time – Drop In, Answer 3 Questions, and Win Prizes

Mary Theofanos is a Computer Scientist with NIST's Materials Measurement Laboratory (MML) where she performs research on usability and human factors of systems. She develops standards for usability, and represents NIST on the JTC1 SC7 TAG and is Co-Convener of WG 28   on usability of software systems. Mary is the

principal architect of the Usability and Security Program evaluating the human factors and usability of cyber security and biometric systems. She established the Biometrics Usability Program for the federal government, the first open research program to incorporate usability into biometrics research, elevating usability to a recognized critical component of biometrics research. Before joining NIST, she was the Manager of the National Cancer Institute's (NCI) Communication Technologies Research Center (CTRC) a state-of-the-art usability testing facility for web sites, applications, and emerging technologies, as well as a training facility and collaborative design center. She spent 15 years as a program manager for software technology at the Oak Ridge National Laboratory complex of the U.S. Department of Energy.

Anthony Treviño

Session: Day 2 Keynote

Assistant Chief Anthony Treviño joined the San Antonio Police Department on September 3, 1993. Upon graduating from the academy, his first assignment was in the Patrol Division, West Service Area. While on Patrol, he was selected as the American Legion Outstanding Officer of the Year. Chief Treviño has risen through the ranks of the San Antonio Police Department to include being selected as the Interim Chief of Police, January through October 2015. He is currently the Assistant Chief over the Operations Bureau.

Assistant Chief Treviño holds a Bachelor of Arts Degree in Criminal Justice from Wayland Baptist University and a Master's Degree in Public Administration from the American Military University. He is a graduate of the City of San Antonio's Leadership Development Program, Senior Management Institute for Police from the Police Executive Research Forum at Boston University, Police Executive Leadership Institute from the Major Cities Chiefs Association, FBI National Academy and the FBI National Executive Institute in Quantico, Virginia.

Assistant Chief Treviño is a retired 23 year veteran of the United States Air Force Reserves where he attained the rank of Chief Master Sergeant, the top 1% of the entire enlisted force. While a member of the United States Air Force, Chief Treviño was selected as the Air Force Material Command, Outstanding Senior Enlisted Officer of the Year.

Assistant Chief Treviño is married to Cynthia and his family includes Ryan, Toniann, Magdelena, Sarah and Sophia.

Ryan Winpigler

Sessions: A User Driven Approach to Identifying Communications & Data Needs from Station to Scene: An in-depth look at PSCR's Usability Research

Ryan Winpigler is a Firefighter/EMT-B at the National Institute of Standards and Technology (NIST), and holds the rank of Fire Captain at the Middletown Fire Company in Frederick County, MD. He has 13 years firefighter experience, including two years career and 13 years volunteer. Ryan has previously held the rank of Assistant Fire Chief, where he served on a team that implemented the rural water supply policy for Frederick County, MD. Ryan is also a part of a regional wildland firefighting team that can deploy anywhere in the tristate area.

Virtual Reality Demo

Do you want to experience how PSCR is leveraging Virtual Reality tools for testing new first responder technologies? The PSCR has set up a 10 minute Virtual Reality Demo for you

!**To experience the a virtual reality demo, simply sign up through the conference app**

Come check out all of the exciting demo tables we have available!
Located in the Hallway Outside of Salon I

GRANT POSTERS

- Open Innovation & Crowdsourcing: Prizes & Challenges
- In-Building LTE Coverage Testing
- Next Generation Deployables
- LBS: Situational Awareness in Incident Response Management
- Out-of-coverage Mission Critical Push To Talk
- Public Safety Identity Management
- Public Safety Security
- Public Safety Sensor Research
- PSCR Kiosk & Student Innovation Projects
- Virtual Reality for Public Safety Research
- DHS Office of Emergency Communications
- Reflections in Indoor Location

PSCR launched a Grant Program in 2017 to fund external research and development in support of PSCR's mission. Grants were awarded for research, advanced engineering, and product development. Grant winners range from academic and industry research, public safety agencies, and developers.

Come checkout the Grant Poster Room to see all the exciting awardees on Tuesday and Wednesday!

PUBLIC SAFETY USER INTERFACE R&D ROADMAP SUMMIT

July 18–19, 2017
www.pscr.gov
NIST Laboratories | Boulder, CO

PSCR

Save the Date!

PSCR is pleased to announce the Public Safety Enhanced User Interface Roadmap R&D Summit will take place **July 18-19, 2017** at the [Department of Commerce Boulder Labs.](#) The Summit enables stakeholders to provide input on the recently published Public Safety Enhanced User Interface R&D Roadmap. PSCR wants to review the roadmap report outcomes with a wide audience in order to gain a sufficiently broad baseline of information from which to develop initial User Interface-related project plans. The Summit will be a working meeting consisting of multiple breakouts designed to gather input from attendees to inform PSCR's decision-making. This event is open to the public but space will be limited.

[Registration is now open! (Click Here)](#)

For more information on PSCR and the Public Safety Enhanced User Interface R&D Roadmap, please visit [www.pscr.gov](#).

For general questions, please email Marc Leh at [mleh@corneralliance.com.](#)

The final roadmap report is available for download here: [http://nvlpubs.nist.gov/nistpubs/TechnicalNotes/NIST.TN.1961.pdf](#)

Purpose:
To gather stakeholder input on priority focus areas for User Interface-related research and development (R&D) to ensure greatest impact for future public safety operations

Outcomes:
- Clearly identified User Interface-related R&D gaps that align with public safety needs and requirements
- Stakeholder input on R&D areas of investment that could be addressed by the NIST R&D funds
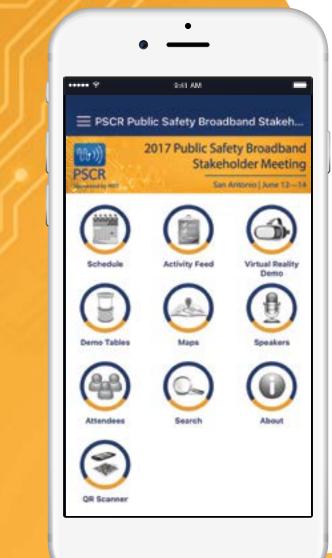- Socialization of the User Interface R&D Roadmap

Agenda:

Day 1 – July 17
8:00am - 4:00pm

Day 2 – July 18
8:00am - 4:00pm

PUBLIC SAFETY BROADBAND STAKEHOLDER MEETING MOBILE APP

Access to everything you need to navigate the meeting, right at your fingertips

Download the PSCR Mobile App!

1 From your app store, download the Crowd Compass Directory

2 Type the meeting name into the search bar
2017 Public Safety Broadband Stakeholder Meeting

3 Enter your name & email to create a Crowd Compass Account

PSCR

PUBLIC SAFETY
COMMUNICATIONS
RESEARCH