

Radio Technology SIG

'Radio Systems for Mission-Critical IoT Communications'

23 January 2017

Hosted by

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Deloitte

 **ROHDE & SCHWARZ**

This SIG is championed by Brian Collins of **BSC Associates**, Diego Giancola of **PA Consulting Group**, Mark Beach of **Bristol University** and Peter Topham of **Qualcomm Technology Ltd**.

Venue: **Deloitte Stonecutter Court, 1 Stonecutter St, London EC4A 4TR**

AGENDA

12:00 Registration and networking over lunch

13:00 Introduction to Radio Technology SIG from **Diego Giancola, PA Consulting Group**

13:10 Welcome from host **Scott Campbell, Deloitte**

13:20 Welcome from sponsor **Lindsay Harris, Pre-Sales & Product Marketing Manager, Rohde & Schwarz**

13:30 **'Exploring the most challenging radio environments for mission critical IIoT communication'**
Reiner Stuhlfauth, Technology Marketing Manager, Rohde & Schwarz

Industrial Internet of Things (IIoT) applications require extremely reliable, wireless communication technologies able to operate under quite challenging radio conditions. Understanding aspects of radio wave propagation, such as path loss, power delay profile, reflection, scattering and delay spread in such environments is an important step in developing appropriate technologies. This talk will shortly introduce a test setup to characterize radio wave propagation of the most challenging radio environments and present some first findings from analysing industrial machine-to-machine and vehicle-to-vehicle communication scenarios.

13:50 Q&A

13:55 **'WiSUN: a reliable bearer for mission-critical IoT applications'**
Simon Dunkley, European Technical and Regulatory Director, Silver Spring Networks

WiSUN mesh is a globally established standard underpinning networks connecting an ever-greater number of mission-critical IoT devices including smart electricity meters, substation transformers, streetlights and smart city sensors. The fundamentals of WiSUN will be explored, revealing the way in which this popular standard is being used to reliably connect over 40 million devices around the world.

14:15 Q&A

14:20 **'How can radio technology adapt to difficult environments?'**
Robin Heydon, Senior Director, Qualcomm Technology International Ltd

Pending regulatory restrictions, it is always possible to increase the speed, range or power of radio transmissions, but sometimes this is not possible. This talk will introduce some problems and solutions to using radio communications in difficult environments, including understanding mesh networking with Bluetooth and the security implications of this.

14:40 Q&A

14:45 Refreshments and networking

Session chaired by SIG Champion, Peter Topham, Qualcomm Technology Ltd

15:15 **'Increased range and longer battery life: Design for RF efficiency'**
John Haine, Visiting Professor, Bristol University

IoT devices are often required to operate in remote locations where network signal levels may be low, and the achievement of long battery life is often a major concern for designers and users. The realisation of high levels of connectivity with minimum power consumption is addressed by optimising RF efficiency. This is a function of the design of the platform, and both the selection of the antenna and its proper implementation.

The talk will explain some of the important design choices that control RF performance and will highlight some of the common pitfalls that should be avoided.

15:35 Q&A

15:40 Steve Braithwaite, CTO, ASH Wireless Electronics Ltd

The design of IoT-type sensing systems can be determined by some surprising things. Where access to the assets to be monitored is limited, dangerous and installation must be performed quickly, and no power is available, design must be driven by this. Monitoring equipment for the Celsius electricity substation monitoring project is the result.

16:00 Q&A

16:05 Panel session with all speakers chaired by Peter Topham, Qualcomm Technology Ltd

16:50 Event closes

With the permission of the speakers, presentations will be loaded to the CW website and slide share on the day following the event

Profile of organisers

Cambridge Wireless (CW)

CW is the leading international community for companies involved in the research, development and application of wireless and mobile, internet, semiconductor and software technologies. With 400 members from major network operators and device manufacturers to innovative start-ups and universities, CW stimulates debate and collaboration, harnesses and shares knowledge, and helps to build connections between academia and industry. CW's 19 Special Interest Groups (SIGs) provide its members with a dynamic forum where they can network with their peers, track the latest technology trends and business developments and position their organisations in key market sectors. CW also organises the annual Future of Wireless International Conference and Discovering Start-Ups competition along with other high-quality industry networking events and dinners. With headquarters at the heart of Cambridge, UK, CW partners with other international industry clusters and organisations to extend its reach and remain at the forefront of global developments and business opportunities.

www.cambridgewireless.co.uk

Profile of sponsor

Rohde & Schwarz UK

Rohde & Schwarz UK Ltd has been the UK subsidiary of Rohde & Schwarz GmbH for 40 years. Based in Fleet, RSUK employs 105 people to provide dedicated sales, services and support to customers across the UK and Ireland. Rohde & Schwarz has designed and manufactured the highest-quality specialist products in Germany for 77 years across a wide range of technologies and industries, including wireless, broadcast, aerospace, defence and security markets. www.rohde-schwarz.co.uk

Profile of host

Deloitte UK

Deloitte provides audit, tax, consulting, and corporate finance services to public and private clients spanning multiple industries. The Global Technology, Media & Telecommunications Industry (TMT) group consists of the practices organised in the various member firms of Deloitte Touche Tohmatsu Limited (DTTL) and is dedicated to helping clients evaluate complex issues, develop fresh approaches to problems and implement practical solutions. Within the Technology practice in the UK, clients range from FTSE100 globally renowned organisations, to fast-growing Tech SMEs; covering a range of sectors from hardware and hi-tech manufacturing, to software and internet. The pace of technological change is one of the biggest challenges facing industry executives today. In a market of economic uncertainty, technology companies are changing their business strategies in order to adapt for success. Deloitte understand the challenges these companies face during their business growth cycle and tailor comprehensive solutions for clients. By helping companies adapt quickly to this evolving terrain, Deloitte unlock the innovative and creative thinking companies need to compete. www.deloitte.co.uk

Profile of SIG Champions

Mark Beach, University of Bristol

Mark Beach received his PhD for research addressing the application of Smart Antenna techniques to GPS from the University of Bristol in 1989, where he subsequently joined as a member of academic staff. He was promoted to Senior Lecturer in 1996, Reader in 1998 and Professor in 2003. He was Head of the Department of Electrical & Electronic Engineering from 2006 to 2010, and then spearheaded Bristol's hosting of the EPSRC Centre for Doctoral Training (CDT) in Communications. He currently manages the delivery of the CDT in Communications, leads research in the field of enabling technologies for the delivery of 5G and beyond wireless connectivity, as well as his role as the School Research Impact Director. Mark's current research activities are delivered through the Communication Systems and Networks Group, forming a key component within Bristol's Smart Internet Lab. He has over 25 years of physical layer wireless research embracing the application of Spread Spectrum technology for cellular systems, adaptive or smart antenna for capacity and range extension in wireless networks, MIMO aided connectivity for through-put enhancement, Millimetre Wave technologies as well as flexible RF technologies for SDR modems underpins his current research portfolio. www.bris.ac.uk



Brian Collins, BSC Associates Ltd

Brian has designed antennas for applications including radio and TV broadcasting, base stations, handsets and consumer products, and has operated his own consultancy firm for the last 12 years. He has published more than 70 papers on antenna topics and contributed chapters to several recent textbooks. He operates a small consultancy company, chairs the Antenna Interface Standards Group and is an Honorary Visiting Professor in the School of Electronic Engineering and Computer Science at Queen Mary, University of London. www.bscassociates.co.uk

Diego Giancola, PA Consulting Group

Diego has spent his career in radio systems R&D and modem design in the wireless communication sector, from 2G to the latest 4G evolutions. His research interests lie in multi-antenna systems and novel signal processing and architectures for radio signals. He currently co-runs PA's signal processing team and leads the research activities in LTE evolution and 5G landscaping. Diego has a first degree in telecommunication engineering and a doctorate in electronics and communication engineering from Politecnico di Milano. www.paconsulting.com

Peter Topham, Qualcomm Technologies International Ltd.

Peter has more than 30 years' experience of RF and high-speed circuit design, taking chips into production ranging from FM Band II through cellular, Bluetooth and on to UWB at 10GHz. He has been with Qualcomm for 7 years, specialising in low-power RF design for portable and wearable products. www.qualcomm.com

Profile of speakers

Steve Braithwaite, CTO, ASH Wireless Electronics Ltd

Steve Braithwaite is the Founder and CTO of ASH Wireless, an electronics and sensing design consultancy in Southampton. Following an early career in satellite communications with Marconi he researched and lectured at the Department of Electronics and Computer Science, University of Southampton. Following a period with a start-up designing pre-GSM wide area rural communications systems, he set up ASH in 2001, which today employs a wide range of engineering staff to tackle interesting and challenging product designs in wireless systems, sensing and power electronics. www.ashwireless.com

Simon Dunkley, European Technical and Regulatory Director, Silver Spring Networks

Dr Dunkley is European Regulatory Director for Silver Spring Networks Ltd, and has worked in the company's London office since 2011. Simon is actively engaged in both CEPT and ETSI workgroups and was closely involved with studies to investigate the release of the 870/915MHz band; indeed, his contribution to the utility community for this work was recognized in him being named one of the '40 Most Influential People in European Smart Grid' in 2015 by Metering and Smart Energy International. Simon was educated in the respective Physics departments of London's Imperial College and the University of Cambridge. www.silverspringnet.com

John Haine, Visiting Professor, Bristol University

Professor John Haine is Royal Academy of Engineering Visiting Professor at Bristol University, and also the Chairman of the IoT Security Foundation, whose mission is promoting best practice in appropriate security to those who specify, make and use IoT products and systems. John is a member of the IET and IEEE and serves on the CW Board. John has spent his career in the electronics and communications industry, working for BT, Marconi, PA Consulting, and with start-ups including Cognito and Ionica. In 1999 he joined TTP Communications working on research, technology strategy and M&A activities; and then became Director of Technology Strategy in Motorola Mobile Devices. He was CTO Enterprise Systems with ip.access Limited, the leading manufacturer of GSM picocells and 3G femtocells. In 2010 he joined Cognovo Ltd, which was acquired by u-blox AG, where he worked on RF platform strategy for future wireless modules. John retired from u-blox in 2015. www.bristol.ac.uk

Robin Heydon, Senior Director, Qualcomm Technology International Ltd

Robin Heydon is a Senior Director, Technology within Qualcomm Technology International Ltd. based in Cambridge, UK. He has been involved in cutting edge technology development for the last 15 years, specialising in short range wireless technologies such as Bluetooth. Robin is the author of the best-selling book on Bluetooth low energy and an active contributor to the Bluetooth SIG. www.qualcomm.com

Reiner Stuhlfauth, Technology Marketing Manager, Rohde & Schwarz

Reiner Stuhlfauth is a technology marketing manager from the Market segment wireless within the Test & Measurement Division of Rohde & Schwarz in Munich. He is responsible for teaching and promoting wireless communication technologies. This includes cellular technologies from 2G to 4G but also wireless connectivity technologies like e.g. WLAN and Bluetooth. Reiner Stuhlfauth is author of a technology book about HSPA. He is involved in several projects concerning 5G and beside technology marketing, he links development and sales organisations to coordinate implementation of technical features into R&S instruments. www.rohde-schwarz.co.uk