



Mobile Broadband SIG '5G – from Standards to Use Cases'

17th November 2016

*This SIG is championed by George Grayland of **Nokia**, Peter Montgomery of **GSMA**, Tom Rebbeck of **Analysys Mason**, Iain Stanbridge of **BT** and Andy Widdess of **Sapura**.*

Venue – PA Consulting, Cambridge Technology Centre, Melbourn, Herts. SG8 6DP

AGENDA

13:30 Registration & Networking

14:00 Introduction to the CW Mobile Broadband SIG from **Peter Montgomery** of **GSMA**

14:10 Welcome from the host, **Tim Devine**, Head of Network Group, **PA Consulting**

Session chaired by SIG champion Peter Montgomery of GSMA

14:15 **'5G enablers and challenges for next generation connected autonomous vehicles'**
Diego Giancola, Principal Consultant, **PA Consulting**

14:35 Q&A

14:40 **'5G conformance conundrums – the impact of diverse use cases.'**
Mark Bailey from Application Development at **Rohde & Schwarz UK**

For the end User, 5G promises to deliver a seamless experience regardless of the access technology employed. With new ambitious use cases, how will the issue of certification be addressed for the new verticals to ensure interoperability? This presentation will debate some of the issues and highlight conformance challenges for the industry and manufacturers of 5G based products.

15:00 Q&A

15:05 **'Virtualising 5G Network Capabilities'**
Serdar Vural, SoftFIRE Project Leader, **5G Innovation Centre (5GIC) University of Surrey**

The University of Surrey, Institute of Communications Systems (ICS), which is also the home of the 5GIC, have been researching 5G core network development for several years in the form of the Flat Distributed Cloud (FDC) architecture. 5GIC(ICS) have now developed and FDC implementation that includes several demonstrable enhancements to the existing LTE EPC that have validated on their campus-wide LTE-A testbed. These features include added security in terms of network enrolment, context information, optimised mobility functions and a flexible Control and User Plane Separation (CUPS) implementation from Rel-14 which includes Moveable Breakout and Traffic Redirection. In the last year ICS have worked together with other 5GIC partners to virtualise this infrastructure. This presentation introduces our virtualisation journey and highlights a selection of key points from our experience on this journey.

15:25 Q&A

15:30 **Coffee/Tea & Networking**

Session chaired by SIG champion George Grayland of Nokia

16:00 **'Sensors, symptoms and smartphones: making use of new types of data for healthcare and clinical research'**

Bruce Hellman, CEO and Co-founder, **uMotif**

Today's ubiquitous connected devices and sensors open new ways to help people track their health and take part in ground-breaking research. uMotif have powered world-leading smartphone based research studies and will discuss how sensors and the network can help bring citizen-science to life.

16:20 Q&A

16:25 'Top- Down – the importance of use cases and collaboration for 5G'

Peter Marshall, Head of MBB UK and Ireland, Ericsson

Peter will present an overview of the key highlights of the current market research within Ericsson that shows trends, expectations and drivers towards 5G. It will share what the consumers' key requirements could be and why using a top-down approach in collaboration with both industry and society groups is an essential component to make 5G what we want it to be.

16:45 Q&A

16:50 Panel Session with all speakers and additional panellist **John Grant of **NineTiles** and the **European Telecommunications Standards Institute**, chaired by **George Grayland** of **Nokia**.**

17:30 Event Closes

With the permission of the speakers, presentations will be loaded to the Cambridge Wireless website on the day following the event

Organisers

Cambridge Wireless (CW)

CW is the leading international community for companies involved in the research, development and application of wireless & 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. For more information, please visit www.cambridgewireless.co.uk

Host

PA Consulting

PA Consulting Group offers technology development and technology consulting services across a broad range of sectors. At our International Technology Centre, we develop award-winning products, automation and manufacturing processes, and help clients understand and use technology more effectively.

Our mobile wireless capabilities include leading-edge technology consultancy in all wireless technology issues such as LTE and the emerging 5G, through to product development in areas such as chipset, software, core technology and femtocells. We have a full design development and prototyping capability at the component, board and software level, and support a wide range of studies, investigations and analysis in the use and deployment of new wireless and communications technologies. Clients include vendors, carriers, users and regulators and we help them to maximise the effective use of new technologies, to reach the market quickly, and to optimise the deployment of scarce resources such as spectrum and Intellectual Property.

SIG Champions

George Grayland, Nokia

George Grayland is a Senior Wireless Solutions Manager with Nokia. George joined Nokia Solutions and Networks in 1998 and has held positions in both Product Management and Technical Sales for GSM, WCDMA and LTE networks. After periods working with Operators such as Telefonica and Deutsche Telecom on 3G, he is now based in the UK and is responsible for Mobile Broadband Networks Solutions working with two of the UK's larger MNOs as they plan their 4G network deployments. Prior to Nokia and NSN George held various positions at Philips Electronics in both R&D and Technical Marketing. He has a BEng in Electrical and Electronic Engineering from the University of Bradford and is a Member of the IET. For further information, please visit www.networks.nokia.com

Peter Montgomery, GSMA

Peter currently leads strategic partnership activities for the GSMA. He works with key stakeholders in the mobile telecoms market to collaborate on GSMA led industry initiatives with the aim of facilitating and triggering market expansion, enabling scale and fostering innovation. In turn lowering the barriers to widespread adoption of technologies such as mobile broadband and enabling new emerging solutions such as embedded mobile to gain a sure foothold. Having acquired a degree in Electrical and Electronic Engineering from Birmingham University, Peter moved swiftly into the commercial world where he led marketing and business development activities at Marconi, Symbian and then Nokia before arriving at the GSMA. For further information, please visit www.gsma.com

Tom Rebbeck, Analysys Mason

Tom has recently re-joined Analysys Mason as Research Director, and has responsibility for the definition, delivery and management of its consumer telecoms research activities. Prior to returning to Analysys Mason, Tom was a Global Project Manager for Telefónica where he was involved in the launch of a number of mobile content services and applications across the Telefónica footprint. Before this, he was Principal Analyst for Analysys Mason, and worked on numerous client projects. For further information, please visit www.analysismason.com

Iain Stanbridge, BT

As Principal Network Architect in BT's Architecture team, Iain is accountable for the evolution of EE's radio access network and spectrum strategy. Iain has been heavily involved in shaping EE's 4G network plans and works closely with stakeholders in EE's operation and partners in the mobile ecosystem to develop new opportunities for the mobile network. Iain has held a number of Design, Architecture and Strategy roles in Orange UK and France Telecom Group, spanning radio and core networks. Prior to joining Orange, Iain worked for Siemens Research at Roke Manor. He has an MEng in Electrical and Electronic Engineering from the University of Birmingham and an MSc in Strategic Management from the University of Bristol. For more information please visit www.ee.co.uk

Speakers

Diego Giancola, Principal Consultant, PA Consulting

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. For more information please visit: www.paconsulting.com

Mark Bailey, Rohde & Schwarz

Mark Bailey is an experienced RF and microwave engineer at Rohde & Schwarz, providing customers with technical and project level support across a spectrum of applications.

This wealth of knowledge is drawn from working in R&D in the satellite and mobile platform industries, designing and developing microwave and RF circuits and systems. Most of his career has been in the mobile industry, from 2G and latterly, as Principal RF Engineer, leading RF teams to integrate multiple radio standards, including 4G, on to mobile reference design platforms.

Rohde & Schwarz are well established for equipping the mobile telecommunications industry with test solutions. The imminent arrival of 5G has seen R&S collaborating with lead innovators in industry and academia, allowing some early 5G R&D concepts to be tested. Mark is integral to supporting these activities within the UK.

Mark has a Masters degree from UMIST, is a Chartered Engineer and Member of the IET. For further information please visit www.rohde-schwarz.com.

Bruce Hellman, uMotif

Bruce is a digital health entrepreneur shaping the future of patient-led healthcare. He is currently working in Parkinson's, Diabetes and Post-Operative care, developing key partnerships and relationships, driving sales, product and service development, business planning, strategy and financing.

Winner of the 2013 Cisco BIG awards, Smarta 100 awards, and nominated as one of '30 to watch in mobile' by Real Business magazine, Bruce was selected by Computer Weekly as one of the UKTech50 Rising Stars of 2013.

uMotif participated in the Future Health Mission UK trade mission to Boston, USA as one of "the UK's most promising early stage and high growth potential healthcare technology businesses"; and on the Web Mission to India. uMotif are founders of Popup Clinic - free, simple and convenient blood pressure testing. For further information please visit www.uMotif.com

Peter Marshall, Ericsson

Peter Marshall is the Head of Network Product Solution across the Western and Central Europe at Ericsson in which he works with operators, industry and academic institutes to provide services and solutions for all mobile telecommunication technologies.

Ericsson is a world leader in the rapidly changing environment of communications technology – providing equipment, software and services to enable transformation through mobility. Some 40 percent of global mobile traffic runs through networks we have supplied and more than 1 billion subscribers around the world rely every day on networks that we manage. With more than 39,000 granted patents, Ericsson has one of the industry's strongest intellectual property rights portfolios.

With the ambition to create a "Network Society" Ericsson has developed close collaborations with key industries, academic institutes and innovative bodies to both challenge and develop what is required to help both society and industry in the future. Peter now acts the point contact to work with King's College to develop tangible use cases that will influence the roadmap and standards of 5G. Already we have presented at various high profile events and published a number of white papers.

Peter has a Ph.D. and has huge wealth of telecoms experience working with both operators and suppliers for over 21 years. He is highly motivated and with track record for showing creative thinking and having effective visionary skills. For further information please visit www.ericsson.com

Serdar Vural, SoftFIRE Project Leader, 5G Innovation Centre (5GIC) University of Surrey

Dr. Serdar Vural received his B.S. degree in electrical and electronics engineering from Bogazici University, Istanbul, Turkey, in 2003, and his M.S. and Ph.D. degrees in electrical and computer engineering from The Ohio State University, Columbus, OH, USA, in 2005 and 2007, respectively. He is currently a 5G Research Engineer with the 5G Innovation Centre (5GIC), Institute for Communication Systems (ICS), University of Surrey, Guildford, U.K. Dr. Vural is currently coordinating the virtualisation of the 5G mobile network infrastructure at 5GIC, ICS. His research interests also include Internet-of-Things, software defined networking, and future Internet. For further information please visit www.surrey.ac.uk/5gic

Additional Panellist

John Grant, Nine Tiles

John Grant's career began at the Cambridge University Computer Laboratory, and he wrote the operating system and BASIC compiler for the Sinclair ZX range of microcomputers. In 1981 he created local area networking technology which was used in both industrial and commercial environments and is still in use today. Since then he has created products for carrying video and audio over digital networks, and related network switching equipment; this has given him an insight into the requirements of audio and other live media, which are very different from those for data traffic. More recently he has been researching how packet networking can meet these requirements as well as avoiding the various problems that have been identified with IP.

He is a member of ETSI ISG NGP, whose remit is to identify technologies that will meet the requirements for next generation infoComms protocols (particularly in Radio Access Networks) and can be implemented in the 2020 timeframe; and is rapporteur for their work item on Packet Routing Technologies. He is also chair of the Audio Engineering Society standards subcommittee SC-02 (digital audio), and editor of ISO TR29181-3 (Future Network switching and routing).