

'Mass network densification for 5G - is the UK ready?'6th June 2018

Hosted by Future Cities Catapult

This SIG is championed by David Chambers of **ThinkSmallCell**, Simon Fletcher of **Real Wireless**,
Neil Piercy of **ip.access** and Simon Saunders of **Google**

Venue: Future Cities Catapult, One Sekforde Street, London, EC1R 0BE**AGENDA**

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| 09:00 | Registration and networking |
| 10:15 | Introduction to Small Cell SIG from Bob Driver, CEO, CW (Cambridge Wireless) |
| 10:25 | 'Small cells for Urban Connected Communities?' Trevor Gill, Telecommunications Consultant What are the factors that have inhibited small cells in the past? Has their time come with 5G? If we need small cells, do we need to share them? How can the DCMS "Urban Connected Communities" project help us find solutions? |
| 10:40 | Session chaired by Simon Fletcher, SIG Champion 'Laying the foundations for 5G deployment in the UK' Dr Matt Yardley, Partner, Analysys Mason Heading off 5G deployment barriers, recommendations for industry and government. Analysys Mason will report on a study recently completed for Broadband Stakeholder Group. |
| 11:00 | Q & A |
| 11:05 | 'Small Cells - an operator's perspective' David Fittall, Radio Evolution Manager, O2, (Telefónica UK) |
| 11:25 | Q & A |
| 11:30 | Refreshments and networking |
| 12:00 | Session chaired by Neil Piercy, SIG Champion 'Small cells and coordinated shared spectrum: is the UK missing out?' Prof Simon Saunders, Principal, Google |
| 12:20 | Q & A |
| 12:25 | 'How to make massive small cell deployment compelling' Paul Senior, CEO, Dense Air |
| 12:45 | Q & A |
| 12:50 | Lunch and networking |
| 13:50 | Session chaired by Neil Piercy, SIG Champion 'A path to urban 5g small cells?' Peter Love, Densification Principle Architect, Nokia Networks This presentation outlines 2 opposing views of 5G urban (outdoor) small cells deployments and highlights some of the key attributes of making it a success |
| 14:10 | Q & A |
| 14:15 | Panel session with all speakers chaired by Neil Piercy, SIG Champion |
| 14:45 | End of session followed by refreshments and networking |
| 16:00 | Event closes |

With the permission of the speakers, presentations will be loaded to the CW website 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 over 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 20 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 major conferences and start-up competitions 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

UK5G

UK5G is the new national innovation network dedicated to the promotion of research, collaboration and the commercial application of 5G in the UK. UK5G is a 'network of networks' to facilitate and encourage the engagement and coordination of organisations working on 5G activities across the UK. It will enhance links between ongoing research and development and other activities being undertaken by organisations across telecoms and other sectors, as well as the testbeds and trials that will be funded through the UK Government's 5G Testbeds and Trials Programme. It will facilitate the joining up of businesses, large and small, academic institutions and the public sector throughout the UK. UK5G is independent and impartial. A senior national advisory board will advise the Government's 5G Testbeds and Trials Programme, providing expert feedback from industry, identifying their priorities and advising on future areas of focus. UK5G will be a focal point for international engagement into the UK's 5G eco-system - encouraging international participation and investment. www.uk5g.org

Profile of host

Future Cities Catapult

Future Cities Catapult aims to advance urban innovation, to grow UK companies, to make cities better. From our Urban Innovation Centre in London, we provide world-class facilities and expertise to support the development of new products and services, as well as opportunities to collaborate with others, test ideas and develop business models. We help innovators turn ingenious ideas into working prototypes that can be tested in real urban settings. Then, once they're proven, we help spread them to cities across the world to improve quality of life, strengthen economies and protect the environment.

Profile of SIG Champions

David Chambers, ThinkSmallCell

David Chambers is Founder and Senior Analyst at ThinkSmallCell.com, an independent website which has tracked the evolution of small cells from their early femtocell origins. With both an engineering and marketing background, and a career spanning product management and marketing for several large telecom vendors, he has gained insight and experience by meeting with mobile operators worldwide. Well known throughout the small cell industry, David writes articles, white papers and presents at conferences on all aspects of the subject. Based in a firm belief that the only technical solution to meet strong data demand is rapid deployment of large numbers of small cells, David continues to be a strong advocate of their adoption whilst pointing out their technical and commercial constraints. www.thinksmallcell.com

Simon Fletcher, Real Wireless

Simon joined Real Wireless in January 2016 as Chief Technology Officer, taking overall technical responsibility across the company. Recognised as a regular speaker at industry events and currently acting as chairman of the CW Future of Wireless Conference Organising Committee and Small Cell SIG Champion, Simon brings an enviable network of contacts to Real Wireless alongside a proven ability to lead teams in delivering technical projects while identifying and meeting new strategic goals for the wider business. His long-standing association with the UK innovation ecosystem as a director of mVCE and the Innovate-UK ICT-KTN brings a wealth of knowledge on the application of strategic research through open innovation to accelerate product and services delivery. In recent times his focus has been on future cities, the application of 5G and IoT in industry verticals with an event horizon towards 2030. Simon spent the past 20 years working in the design and development of technical telecoms infrastructure.

Beginning his career in technology demonstrators at Racal Radar Defence Systems, he moved to Telecoms Modus in 1999 to play a key role in the development of 3G products and in 2006 he established a core architecture team that helped develop the first-generation of technology for 4G systems culminating in a Steering Board position in the LTE SAE Trials Initiative (LSTI), a global forum with a mission to assure the early adoption of LTE. His long participation in Common Public Radio Interface (CPRI) defining early C-RAN concepts brings great foresight on an important architectural element of emerging 5G architectures. www.real-wireless.com

Neil Piercy, ip.access

Neil has been developing base stations for various communications systems for over 25 years, during which time he has performed roles throughout the whole development lifecycle as well as management roles. He joined ip.access as a small cell System Architect when the company was in its infancy in 2000, and has since designed GSM, UMTS and LTE small cell RAN equipment and systems. His specialist areas include security and networking, as well as a focus on all aspects of protocol design and implementation, and on system performance and simulation. Now as Head of Research he is responsible for ip.access future products and technologies. He is an active member of the Small Cell Forum, a Champion for their work on the Virtualisation of small cells. He is currently a representative for the EU project SESAME on the 5GPPP Architecture group. www.ipaccess.com

Simon Saunders, Google

Simon is a specialist in the technology of wireless communications, with a technical and commercial background derived from senior appointments in both industry (including Philips and Motorola) and academia (University of Surrey). He is an adjunct professor at Trinity College Dublin and Access Technology Principal at Google. As co-founder and Director of Technology for independent wireless strategy advisory firm Real Wireless, he was responsible for overall technical capability and direction, providing independent wireless expertise and advice to operators, regulators, technology and law firms and wireless users. Customers included Ofcom, Cisco, European Commission, Virgin Media, TalkTalk, Inmarsat and many others. He is an author of over 150 articles, books and book chapters. He has acted as a consultant to companies including BAA, BBC, O2, Ofcom, BT, ntl, Mitsubishi and British Land and was CTO of Red-M and CEO of Cellular Design Services Ltd and has acted as an expert witness in legal proceedings in England and the US. Simon speaks and chairs a wide range of international conferences and training courses and has invented over 15 patented wireless technologies. Particular expertise includes in-building wireless systems, radiowave propagation prediction, smart antenna design and mobile system analysis. He has served on technical advisory boards of several companies, was Visiting Professor to the University of Surrey, member of the industrial advisory board at University College London, founding chairman of Small Cell Forum (formerly Femto Forum), which he chaired from 2007-12 and a member of the Ofcom Spectrum Advisory Board from 2007-14. www.google.co.uk

Profile of speakers

David Fittall, O2 (Telefónica UK)

David has worked in the mobile industry for almost 20 years first with Vodafone and currently with O2. His current role is managing the Network Evolution & Customer team reporting to O2's Head of Radio with the responsibility for radio strategy, assessing and forecasting network demand, coverage and capacity modelling, and defining and measuring customer experience and network performance KPIs. www.O2.co.uk

Trevor Gill, Telecommunications Consultant

Trevor Gill graduated from Cambridge University in 1977 and joined Racal Electronics to work on development of military radio systems. In 1983 he was part of the small team which helped to choose the technology of the analogue cellular network launched by Racal Vodafone in 1985. He initiated the design of the world's first GSM mobile phone before moving to Vodafone to lead development of radio planning software. In Vodafone R&D he steered the subsequent development of 3G, 4G and the beginnings of 5G technology. He was recognised as a Vodafone "Distinguished Engineer" in 2012. He is now an independent consultant and trustee of two charities which encourage young people to take up careers in engineering.

Peter Love, Nokia

Peter has worked in the mobile communications industry for nearly 30 years, firstly at Orbitel UK and then at Nokia Networks. Peter helped developed the first 2G DCS1800 BTSs to Orange and then continued in building a viable business for network planning and optimisation services in the UK. Holding various roles over the years focusing on UK, Europe and global markets Peter is now a principle services architect in the 5G/densification area helping operators globally to make the most appropriate decisions. In parallel, and for the past 4 years, Peter has held the office of chair/vice chair of the Small Cells Forum Operations group. www.nokia.com

Simon Saunders, Google

Profile above.

Paul Senior, Dense Air

Paul Senior is Chief Strategy Officer, a co-founder of Airspan Networks, Managing Director of Airspan Spectrum Holdings and now CEO of Dense Air. At Airspan Paul is responsible for guiding the company's technical and commercial and product evolution strategies. Part of this role involves spectrum acquisition via Airspan Spectrum Holdings, which is focused on obtaining spectrum for Airspan's Small Cells to support Small Cells as a Service (SCaaS) offering and the Dense Air operating companies in Ireland, Belgium and Portugal. Paul is an industry veteran, with over 30 years' experience in the radio telecommunication industry, spanning the era's of 2G, 3G and 4G deployment and the rise of mobile broadband. Next stop 5G! www.denseair.net

Matt Yardley, Analysys Mason @mattyardley_am

Matt is a Partner at Analysys Mason, where he has worked since 1997. He has advised operators and investors on next-generation network strategies including fibre-to-the-home (FTTH) and future mobile technologies; broadcasters on content distribution using broadband networks; regulators on competitive issues in next-generation access networks and the costs of broadband universal service obligation (USO); and governments on broadband public policy and national broadband plans. Matt has led numerous projects assessing the business case for investment in fibre networks. He has also advised on financial transactions and strategy projects where FTTH has been depolyed using electricity utility infrastructure, a theme that he has been involved in since working with the European Commission (EC) on the Broadband Cost Reduction Directive in 2012. More recently, Matt led our work for the EC on costing the future connectivity needs of Europe including gigabit speeds, covering both FTTH and 5G. Matt is currently directing Analysys Mason's work for the Irish Government on its National Broadband Plan, one of the largest projects of its kind in Europe. www.analysysmason.com