Small Cell SIG

'Interoperability of Small Cells & the Existing Cellular Networks - What's the Hold Up?'

1st October 2014

This event is hosted by PwC and jointly sponsored by Microlease & Keysight Technologies

*This SIG is championed by David Chambers of **ThinkSmallCell,** Zahid Ghadialy of **eXplanoTech,** Simon Fletcher of **NEC Telcom MODUS,** Paul Kenworthy of **Ranplan** and Simon Saunders of **Real Wireless**, ,*

Venue: PricewaterhouseCoopers LLP, 7 More London Riverside, London, SE1 2RT

AGENDA	
12:00	Registration & Networking over Lunch
13:00	Introduction to the Cambridge Wireless Small Cell SIG from **Paul Kenworthy** of **Ranplan**
13:05	**Welcome from our host Colin Brereton, Global Leader, Communications, PwC**

Session chaired by **Simon Fletcher** of **NEC**

13:15	**Welcome from our sponsor, Chris Trim, Northern Europe Sales Manager, Keysight Technologies**
13:20	**"Small Cells, What's the Hold Up - a T&M Perspective"**
	Bert Esser, Northern European Applications Engineering Manager, Keysight Technologies
	Bert will take the theme of the day: "Small Cells - what's the hold up?" and share some thoughts from a T&M company perspective. Looking into some of the market drivers for operators and equipment manufacturers and "translating" these to tangible challenges for T&M companies like Keysight.
13:40	Q&A
13:45	**"Small Cell/Macro Interoperability in the RAN: Impossible Physics, Hard Design or just Red-Tape?"**
	Nick Johnson, Chief Technical Officer, ip.access
	• Why do we care about interoperability in the RAN?
	• Some anecdotes from history – interoperability failures on Abis, Iu-b, Load balancing with picocells – doing it right this time
	• Beyond standards – NGMN, SCF and other interoperability initiatives
	• Buridan Telecom – a cautionary tale
	• The schizophrenic vendor – can I protect my incumbency and attack the incumbent without contradicting myself?
	• Interoperability and cloud-RAN – don't get distracted
	• Message of hope – what's happening now – what's happening next
14:05	Q&A
14:10	**"Bringing Metro Cells on Air – Findings from the Field and the Evolving Impact of Open Access"**
	David Swift, Marketing Director, Wireless Networks Marketing & Strategy, Alcatel-Lucent
	• Why deploy Metro Cells
	• Placing capacity where needed
	• Beyond the AP Addressing Deployment Challenges
	• Metro Cell evolution
	• Service enablement
14:30	Q&A
14:35	**Coffee/Tea & Networking**

15:05   **"Progress Towards Maturing the Small Cell Multi-vendor HetNet Proposition"**

Neeraj Gupta, Senior Manager, and **Kreso Bilan, Telecommunications Systems Architect, NEC UK**

Through 3GPP, Small Cell Forum, ETSI and NGMN collaboration the industry has established the critical interfaces and best practices necessary to gain interoperability proof points in multi-vendor HetNet deployments. This was recently demonstrated by the successful completion of a plugfest in July, involving a broad range of macro and small cell eco-system vendors. Neeraj and Kreso, as chairs of core working groups responsible for providing direction to these activities within the Small Cell Forum, will highlight the challenges that have been overcome, and those that are still to be addressed.

15:25   Q&A

Session chaired by **Simon Saunders of Real Wireless**

15:30   **"How well do Small Cells fit within Heterogeneous Management Solutions?"**

Phil Claridge, Chief Innovation Architect, JDSU UK

This talk will explore the extent to which operators can gain a good planning and operational insight into their small cell networks (both licenced and unlicensed). The talk will focus on management solutions where the small cell network contributes to single view of a larger heterogeneous network, with a strong focus on per subscriber experience rather than just equipment and network health. Will include a perspective on the information that can or cannot be recovered from operational networks contrasting standards, vendor implementations, and future mature solutions.

15:50   Q&A

15:55   **"Evolution or Revolution of Interoperability for Small Cell"**

Alessandro Bovone, Senior Manager, Network Strategy, EE

What does interoperability mean in a small cell environment? Can a mobile operator afford the challenge to manage a multivendor environment and maintain on the small cell layer the level of customer experience that is now achievable on macro cell?

16:15   Q&A

16:20   Panel Session with all speakers chaired by **Simon Saunders** of **Real Wireless**

17:00   **Fill in Evaluation Forms and Event Closes**

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

Profile of Organisers

About 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

Profiles of Sponsors

Keysight Technologies

Keysight Technologies is the world's leading electronic measurement company, transforming today's measurement experience through innovation in wireless, modular, and software solutions. With its HP and Agilent legacy, Keysight delivers solutions in wireless communications, aerospace and defense and semiconductor markets with world-class platforms, software and consistent measurement science. For more information, please visit: **www.keysight**.co.uk

Microlease

Microlease is the expert in Test Equipment Management. We have over 30 years of experience offering the best test equipment with a range of financing options. With over 4,000 instruments to choose from covering a range of manufacturers and industries, Microlease can help deliver your projects on time and on budget. Whether you need equipment for short or long periods, we can help you easily acquire what you need, when you need it, with options that are ideal for your situation. Our portfolio of services includes rental, leasing and finance, buying new or used equipment, calibration, asset management and auditing and even a programme to buy back your unused equipment. Microlease is also Keysight Technology's Authorised Technology Partner in the UK, Ireland and Italy. Our strong partnership with Keysight gives you access to the best Keysight equipment supported by an unbeatable range of Microlease financial solutions. For more information please visit: www.**microlease**.com.

Profile of Host

PWC

PwC is founded on a culture of partnership with a strong commercial focus. This is reflected in our vision: "One firm - a powerhouse of a commercial enterprise that does the right thing for our clients, our people and our communities." Our goal is to build the iconic professional services firm, always front of mind, because we aim to be the best. We set the standard and we drive the agenda for our profession. For more information visit: www.**pwc**.co.uk

Profiles 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. For more information please visit: www.**thinksmallcell**.com

Simon Fletcher, NEC Telcom MODUS

Simon Fletcher has working in the communication industry for over 10 years, having represented NEC in Global joint venture enterprises developing 3G and 4G radio access products; working in various Systems and Project Management roles. Recently he has completed a spell as the Steering Board representative for NEC Corporation in LSTI (LTE SAE Trials Initiative) and is engaged in the management of 3GPP RAN1 standards development and early stage product innovation processes. Simon is a member of the Board of the Mobile Virtual Centre of Excellence (MVCE), Industrial Chairman for the EPSRC/MVCE Green Radio Programme, and on behalf of the MVCE Board leads discussions on new Open Innovation initiatives targeted to launch in 2012. For more information please visit: www.**t-modus.nec**.co.uk

Zahid Ghadialy, eXplanoTech Ltd.

Zahid has been working in the mobile industry since the dawn of 3G. He worked with the team responsible for the first 3G network rollout in Japan and Europe. Since then he has worked with several established and small companies in different areas of technology as an engineer, programmer, researcher, architect, trainer, project manager, product manager and even in PR and marketing functions. During his career spanning over 15 years, he has worked with chipset and handset manufacturers, network equipment vendors, research companies, small cells and wi-fi companies, analyst firms and even consulting companies. As a Co-Founder, Managing Director and CTO of eXplanoTech, Zahid is using his immense experience to help this young company become well established and successful. Along with an expertise in programming and 3G / 4G technologies, he is nowadays working on futuristic ideas and technologies, including 5G. He is a regular speaker at many small and international conferences and events. His 3G4G blog (http://blog.3g4g.co.uk/) is one of the most well-known independent mobile technology blog worldwide. You can also follow him on twitter **@zahidtg.** For more information please visit: www.**explanotech**.com

Paul Kenworthy, Ranplan

Paul Kenworthy is the sales & marketing manager for Ranplan Wireless Network Design who provide a wireless network design tool for indoor & and indoor-outdoor wireless networks. Peviously, Paul founded Apoideas, who developed an ultralow power wireless communications platform for telemetry applications. Prior to that, Paul was in management and engineering positions at Motorola, TTPCom and NEC. Paul has twenty years of experience in wireless communications and international business experience having lived & worked in Japan, Singapore, Australia & the United Kingdom. Paul holds an MBA from the University of Cambridge and bachelor degree in electrical engineering from Monash University (Australia). For more information please visit: www.**ranplan**.co.uk

Prof. Simon Saunders, Real Wireless

Simon is an independent 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). As co-founder of Real Wireless, he is responsible for overall technical capability and direction. He is an author of over 140 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. 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, Visiting Professor to the University of Surrey, member of the industrial advisory board at University College London and was founding chairman of Small Cell Forum (formerly Femto Forum), which he chaired from 2007-12. He is a member of the Ofcom Spectrum Advisory Board. For more information please visit: www.**realwireless**.biz.

Profiles of Speakers

Bert Esser, Northern European Applications Engineering Manager, Keysight Technologies

A.J. Esser (Bert) has an engineering and business degree from the" HTS Amsterdam". He joined Hewlett-Packard in 1986 and has held several technical and commercial positions mainly in digital architecture and system verification. Bert is currently responsible for Keysight's technical staff in Northern Europe. For further information, please visit www.**keysight**.co.uk

Nick Johnson - CTO ip.access

Nick founded ip.access in 1999. Until 2006 he led the engineering team, delivering the profitable nanoGSM products to the business. He took ip.access' technology into partnership with Cisco and the world's largest W-CDMA residential small cell deployment with AT&T.

After two years with customers and partners in the USA, he has returned to the UK to lead the business's next generation technology activities. He chairs the Radio and Physical Layer working group of the Small Cell Forum.

Nick has a PhD in Microwave Scanned Imaging Techniques from University College, London, and an MA in Physics from the University of Cambridge. For further information please visit www.**ipaccess**.com

David Swift, Marketing Director, Wireless Networks Marketing & Strategy, Alcatel-Lucent

David Swift is Marketing Director for Alcatel-Lucent's portfolio LTE and small cell's solutions. He is responsible for LTE overlay solutions incorporating macro and small cells.

David has acquired an international reputation as a market visionary and innovator working with various network operators to successfully bring to market "communications services" for mass consumer and business to markets. Recent projects include LTE/4G first mover strategy for mobile service providers, and Small Cell location and network capacity management realization.

David has held roles at GPT, Alcatel, GSMA, Lucent, and now at Alcatel-Lucent within the Wireless Access group responsible for marketing Alcatel-Lucent's Small cell and LTE portfolios which will enable operators to gain market advantage and strengthen their relationships with subscribers.
For further information, please visit: www.**alcatel-lucent.com**/solutions/wireless-ip

David is an avid blogger: see his comments at www.wilson-street.com

Neeraj Gupta, Senior Manager, NEC UK

Neeraj Gupta has over fifteen years of experience across Technology Strategy, Standards, Architecture/Systems Engineering and Product development in the telecommunication domain.
He is currently working as Senior Manager in NEC UK managing NEC 3GPP Standardisation, Technical Marketing and LTE End to End Small Cell solution portfolio development programs.
Prior to that he worked for Motorola responsible for Technology and Solution development in the Voice over IP domain .
Neeraj has a Masters Degree in Telecommunication Networks from Indian Institute of Technology, Kanpur and a Bachelors degree in Electronics and Communication Engineering from Aligarh University, India.
For further information please visit www.uk.**nec**.com

Kreso Bilan, Telecommunications System Architect, NEC UK

Kreso Bilan holds a BSc in Physics and MSc in Mathematics (from King's College London). He has chaired the Interoperability Working Group at the Small Cell Forum for the past 4 years, where he is involved with a number of SCF (with the support of ETSI and NGMN) organised plugfest interoperability events. For further information, please visit www.uk.**nec**.com

Phil Claridge, Chief Innovation Architect, JDSU UK

Currently Phil is having great fun working within Arieso Business Unit of JDSU as Chief Innovation Architect with a hands-on role defining and implementing a number of Arieso¹s future innovations - involving Big Data, Location Intelligence and a few even needing a few lines of pathfinder code written. Previously Phil was Chief Architect for Geneva (a successful carrier billing system developed in Cambridge), representing Geneva in its trade sale to Convergys, retaining the same role in Convergys, and then leading Convergys Cambridge Innovation Labs. Before this Phil was Director Strategic Technology at Madge Networks at the time of Madge's IPO, and was one of the founder team when Madge spun out Red-M. Phil's recent career in carrier solutions and software is balanced by an early career in electric engineering and electronics working for Thorn-EMI, Integrated Photomatrix, and Infotron. For more information please visit www.**arieso**.com

Alessandro Bovone, Senior Manager, Network Strategy, EE

Alessandro is Network Strategy Senior Manager in EE looking at the evolution of the network and the technology. He is accountable to develop a medium to long term Network Strategy and this role includes the responsibility for the overall EtoE small cell strategy.

Alessandro has a solid track record within the telecom business with more than 13 years' experience working in R&D, testing, system and innovation, customer support, design and strategy. For further information, please visit www.**ee**.co.uk

Delegate List

Name	Organisation	Company Profile
Viraj Abhayawardhana	British Telecommunications	Leading UK fixed line operator, ISP and telecoms supplierGlobal ICT supplier
Leila Aghamoradi	Filtronic PLC	
Colin Aitken	NextG Limited	LTE protocol stack technology product development and services company.
Ahmed Aldabbagh	Ofcom	
Zaid Al-Daher	WORIC - University of South Wales	Wireless & Optoelectronics R&D
Kieran Arnold	Satellite Applications Catapult	The Satellite Applications Catapult is a new type of independent innovation and technology company
James Atkinson	Wireless Magazine	PRESS
Shaswar Baban	King's College London	kcl.ac.uk
Robert Bahns	Imperial Innovations	Venture investing
Rupert Baines	Real Wireless	Wireless Consultancy
Steve Baker	TTP	
Iris Barcia	Keima	HetNet Design
Ashweeni Beeharee	Satellite Applications Catapult	
Damian Bevan	DBAF Consulting Limited	Systems analysis, algorithm design and simulation software for wireless systems
Kreso Bilan	NEC UK	
Alessandro Bovone	EE	
Colin Brereton	PwC (Technology)	The largest professional services firm in the UK, we work alongside a myriad of businesses.
Phil Bull	Amdocs	Telecoms ISV and Professional Services Company
Neil Burbidge	Flint Consulting Limited	Solutions Implementation Specialist in Mobility Small Cells
John Burns	Aegis Systems	Advisers on technical and regulatory matters relating to use and management of radio spectrum
Manu Chadha	Hughes Systique Corporation	
David Chambers	ThinkSmallCell	SIG CHAMPION
Philip Claridge	JDSU	SIG CHAMPION

Paul Coffey	Coffey Comms	Consultancy
John Darroch	Flint	
Laurence Doe	Land Mobile	PRESS
John Doyle	Benetel	Benetel are an RF and Wireless design and test company established in 2001.
Anthony Dunne	Arqiva	
Andrew Entwistle	New Street Research	
Bert Esser	Keysight Technologies	
Stirling Essex	Espansivo	SIG CHAMPION Helping organisations make better strategic decisions in technology, marketing and business devt
James Finlow	FCO Services	
Michael Fitch	BT	Fixed and mobile communications operator and service provider
Simon Fletcher	NEC Telcom MODUS	SIG CHAMPION
Matt Foster	Microlease	
Daniel Fox	British Sky Broadcasting Ltd	The Cloud is a public access Wi-Fi provider which is part of BSkyB and has over 5 million registered users. The Cloud builds and operates Wi-Fi networks across the UK and Europe.
Caroline Gabriel	Rethink Research	PRESS
Zahid Ghadialy	Explanotech	SIG CHAMPION Technical Consulting, Technical Training, Managed Services, Resourcing and Recruitment
Steven Gilbert	Explanotech	Delivering Consultancy & Managed Services within 3GPP LTE / LTE-A / HetNets Technologies
Baldev Gill	Vilicom UK Ltd	
Antoine Grenier	Deloitte (Entrepreneurial Business)	At Deloitte we identify with and celebrate the spirit of entrepreneurship.
Neeraj Gupta	NEC UK	
Andrew Hobbs	Airspan Networks	Small Cell Equipment Vendor
Richard Jacklin	Anite	Wireless Test & Measurement
Vikrant Jain	Qualcomm Inc	Qualcomm
Neil Jeffery	British Telecommunications	Leading UK fixed line operator, ISP and telecoms supplierGlobal ICT supplier
Nick Johnson	ip.access	
Dai Jones	MLL Telecom	MLL Telecom
Sean Keating	Vilicom UK	Wireless network engineering consulting; Project Management; Strategy consulting; Special Coverage solutions; Network design
Paul Kenworthy	Ranplan	SIG CHAMPION
Chadi Khirallah	NECTM	
Chris King	EML Wildfire	Tech PR agency with the Small Cell Forum as a client
Dharmendra Lad	Cambridge Consultants Ltd	Wireless product R&D
Natalia Lapotko	Mergermarket	PRESS
Behrooz Lessani	5BARz International	
Alun Lewis	Tetra Today	
Richard Machin	IOTAS	IOTAS is a leading provider of interoperability testing solutions.
Antonio Marcantonio	UL	Safety, test, verification and approval services for consumer products

Robert McDowall	Wireless Infrastructure Group	
Bobby Mughal	AWTG Ltd	AWTG is an end-to-end technical service provider to the wireless telecommunications industry.
Virendra Nath Nagar	Airspan	Global provider of 4G broadband wireless systems and solutions that deliver high-speed data, voice and multimedia services.
Enrico Nigra	Nokia	
Adrian O'Connor	Benetel	Small Cell Module Supplier
Gerard O'Neill	Angetech Consultants Ltd	
James Parris	Conmitto	Wireless ISP and Technology Service Provider to the Property Industry
Constantinos Patsalos	Alcatel-Lucent	Telecommunications
Justin Paul	Amdocs	
Ken Pearson	Pensa Consulting	Pensa assesses spectrum licensing issues, auctions and the impact of technology driven change.
Tim Phipps	Cambridge Consultants	SIG CHAMPION Product Development Consultancy
Seshaiah Ponnekanti	NEC	Small cells R&D in LTE, Systems Integration, Delivery
Khurram Qayam	Net-Integ Solutions	
Bozidar Radunovic	Microsoft Research	SIG CHAMPION
Adeel Raja	Arqiva	Engineering and Technology
Pete Randall	JDSU UK	Arieso solutions locate, store and analyse data from billions of calls. JDSU acquired Arieso in March 2013.
Brian Robertson	Broadcom	
Tim Robertson	Requaero	Specialises in recruitment to the micro-electronics, embedded software, and electronics product ecosystem.
Freddy Romero	ARU	
Simon Saunders	Real Wireless	SIG CHAMPION
Neil Scully	Vodafone Group	
Peter Shearman	Cisco	
Emmanuela Spiteri-Micallef	ip.access	Headquartered in the United Kingdom, ip.access has been deploying small cell solutions for more than
Sami Susiaho	BSKYB	SIG CHAMPION
Andy Sutton	EE	SIG CHAMPION The UK's most advanced digital communications company.
David Swift	Alcatel Lucent	
Richard Taylor	Flint	
Dave Townend	British Telecommunications	Leading UK fixed line operator, ISP and telecoms supplierGlobal ICT supplier
John Townsend	Angetech Consultants	Telecoms Consultancy Practise
Chris Trim	Keysight Technologies	
Paul Trubridge	Airspan Communications	Airspan is a vendor of 4G Small Cell infrastructure.
Anvar Tukmanov	BT	Telecom operator
Geoff Varrall	RTT Online	SIG CHAMPION Handset and network design and facilitation programmes
Gandharv Verma	Hughes Systique Corporation	IT Solutions
Meng Wang	JDSU UK	
Enda Ward	Sharp Telecommunications of Europe Ltd	

Jon Webb-Peploe	Cisco	Cisco is the worldwide leader in IT.
Xusheng Wei	Sharp Telecommunications of Europe	electronic manufacturer
Patricia Wells	NEC Telelcom MODUS	
Steven West	Rohde and Schwarz	Independent sales, service and technical support provider.
Darren Willsher	EML Wildfire	Tech PR
Daniel Wilson	eXplanoTech	Delivering Consultancy & Managed Services within 3GPP LTE / LTE-A / HetNets Technologies
Sarongrat Wongsaroj	Plum Consulting	
Rupert Wood	Analysys Mason	Global consultancy and research company specialising in telecoms, media and technology (TMT).
Martin Wren-Hilton	TalkTalk Group	Britain's best value phone, broadband and mobile provider