CW CAMBRIDGE WIRELESS

The Virtual Networks Group
'The Time is Ripe for Innovations'
9th November 2017
Hosted by The Bradfield Centre, sponsored by InterDigital Europe

This SIG is championed by **Phillip Bridge** of **EE, Mark England** of **Cambridge Consultants, Justin Paul** of **Huawei Technologies** and **Dirk Trossen** of **InterDigital**

Venue: The Bradfield Centre, 184, Cambridge Science Park, Milton Road, Cambridge, CB4 0GF

AGENDA	
13:00	Registration and networking with lunch
14:00	Introduction to the Virtual Networks Group from **SIG Champion, Justin Paul, Huawei Technologies**
14:10	Welcome from event supporter, **Alan Carlton,** VP, **InterDigital**
14:20	**'Turning the Edge into Mini-Internets – The Holistic Edge'** **Dirk Trossen,** Senior Principal Scientist, **InterDigital** We see an increasing proliferation of compute and storage resources at the edge of the network, both wired and wireless. This talk will discuss work on turning this increasingly rich edge into mini-Internets that serve end-users with lower latency and richer services, while continue to utilize the rich Internet-based cloud infrastructure that we know.
14:40	Q&A
14:45	**'Leveraging NFV and SDN in 5G core networks'** **Andy Odgers,** CEO, **Quortus** How the virtualisation and disaggregation of mobile network core functions, coupled with SDN concepts and 5G capabilities such as network slicing can be used to drive innovative and scalable Edge Computing solutions for Enterprise and IoT deployments.
15:05	Q&A
15:10	**Exhibition and networking with refreshments**
16:10	**Demo 1 - InterDigital** **Dirk Trossen,** Senior Principal Scientist, **InterDigital**
16:20	Q&A
16:25	**Demo 2 - Zeetta Networks** **Nick Randall,** Sales and Marketing Director**, Zeetta Networks**
16:35	Q&A
16:40	Panel session with all speakers chaired by **SIG Champion, Justin Paul, Huawei Technologies** **Extra Panellists:** **Dr Frank Mungau,** Founder, **TrueUX Ltd** **John Bisseru,** Director, **Estatom**
17:10	Q&A
17:25	**Event wrap up**
17:30	**Event close**

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 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 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**

Profile of sponsor

InterDigital

InterDigital, Inc. designs and develops advanced technologies that enable and enhance mobile communications and capabilities. Since our founding in 1972, our engineers have designed and developed a wide range of innovations that are used in digital cellular and wireless products and networks, including 2G, 3G, 4G and IEEE 802-related products and networks.

InterDigital has been a pioneer in mobile technology and a key contributor to global wireless standards. Our team of approximately 180 engineers – approximately 80 percent of whom hold advanced degrees, including 60 PhDs – has unparalleled expertise in major mobile connectivity and content delivery technologies. Since 2000, InterDigital has spent over $1 billion on technology research and development. **www.interdigital.com**

Profile of host

The Bradfield Centre and Central Working

The Bradfield Centre is a collaborative entrepreneurial community of technology start-ups and scale-ups at the heart of the Cambridge Science Park. The new Centre is expected to become the gateway and focal point for Cambridge's ever-expanding technology cluster. The Centre is the largest of Central Working's global network of rapidly expanding membership-based communities. **http://centralworking.com/locations/cambridge**

Profile of SIG Champions

Philip Bridge, EE

Phil Bridge has spent over three decades in the telecommunications and networking industries. He has worked in research labs, academia, start-ups, equipment vendors and service providers, in the UK and Switzerland, in technical, marketing and management roles. From 2002 he worked at Orange as a network designer and architect, and continues that role at EE since it was formed from the merger of Orange UK and T-Mobile UK. Currently he is concerned with the technical strategy for mobile data in general, and the evolution of the architecture of the mobile data core network in particular. For more information please visit **www.ee.co.uk**

Justin Paul, Huawei Technologies

Justin Paul works at Huawei Technologies, in the Western European Marketing team. He has worked in telecommunications for 20 years in product marketing and product management roles for leading telecommunication companies specializing in bringing new technologies to market. At Huawei he is part of the emerging technologies marketing team focusing on NFV/SDN and IoT. Prior to joining Huawei, he worked for Amdocs as Head of NFV and OSS Marketing; as an independent consultant to the Scottish Government; Airwave, the UK Public Safety Network Operator (TETRA) as Head of Product Marketing; Alcatel-Lucent as Head of Segment Marketing and Nokia as System Marketing Manager for the early GPRS and 3G data networks. For more information please visit **www.huawei.com**

Mark England, Cambridge Consultants

Mark England has spent three decades architecting, designing, and implementing a wide variety of wired and wireless communications products, services, systems and protocols; from short range point to point systems to those which operate on a global scale. Mark joined Cambridge Consultants in 2000, and for the past 17 years he has been providing leading edge design, development and consultancy services to a wide range of clients. For more information please visit www.**cambridgeconsultants**.com

Dirk Trossen, InterDigital UK

Dirk Trossen has more than 15 years of experience in network architectures, wireless technology, and context-aware services. He has led numerous research projects in his corporate positions as well as in international collaborations with world-leading universities and institutions like MIT, Cambridge University, GeorgiaTech and Columbia University. Prior to joining InterDigital as a Principal Engineer, Dirk held a position as Senior Researcher at the Computer Laboratory ofthe University of Cambridge. He also held prior positions as Chief Researcher with BT Research and as Principal Scientist with Nokia Research. He is a research affiliate with the Advanced Network Architecture group at MIT CSAIL and one of the co-founders of TecVis LP. For more information please visit **www.interDigital.com**

Profile of speakers

Alan Carlton

Alan Carlton is Vice President, InterDigital and Head of InterDigital International Labs Organization spanning Europe and Asia. In these regions Alan is responsible for R&D activities in the areas of 5G and IoT. Alan has led his organization to over a dozen major collaborative project wins. He founded and currently leads the oneTRANSPORT initiative, one of the largest Smart City projects in the UK. In the area of 5G Alan's research interests include next generation internet and advanced applications of NFV/SDN technologies. Alan has over 25 years wireless industry experience spanning every generation of wireless. Prior to InterDigital, he held senior positions at Nortel, Siemens and several wireless startups both in Europe and United States. Alan is an EEE graduate of the University of Strathclyde, Glasgow and also holds a MSc. in Communications & Signal Processing from Imperial College, London. Alan holds many patents covering a diverse range of wireless technology areas. He is a regular invited speaker at wireless industry events and is also author of a wireless futures blog for Computerworld. **www.interDigital.com**

John Bisseru, Estatom
Profile to follow.

Frank Mungau, TrueUX Ltd

Frank Mungau holds a Ph.D. in Electronic Engineering for which he specialised in the mathematical modelling of radio wave propagation and modulation/demodulation systems. Taking advantage of a strong academic background and after working in Network Operations for a Tier 1 operator in the UK, Frank researched and developed the SureLink-XG concept to enable operators to cost effectively scale the network whilst maintaining optimal technical performance. SureLink-XG achieves a world's first by solving performance problems on an individual subscriber basis.

Andy Odgers, Quortus

Andy Odgers founded Quortus in 2009 and in that short time has been responsible for its sustained growth with the company now boasting multiple deployments worldwide. A serial innovator, Andy has spent the past decade developing software solutions for mobile networks. In 2003 he founded Zynetix, the developer of GSM softswitches, successfully negotiating the company's sale to Sonus Networks. Following this he assumed the role of Sonus' VP of Wireless Technology until taking part in a management buy-out of Zynetix in 2008. Andy subsequently worked as Technical Director of Zynetix up to the subsequent sale of that company to Globe Wireless. **www.quortus.com**

Nick Randall, Zeetta Networks

Nick joined Zeetta Networks from Accedian where he was Director of Sales Channel Partners EMEA. His main skills and attributes reside in successful business development and relationship building between system integrators and channel partners. Nick has been instrumental in the strategic decision making and forward moving vision of the company. Using his industry experience to target our products and services into the market place to date he is a key and valuable member of the team. **www.zeetta.com/**

Dirk Trossen, InterDigital UK

Profile as above www.**interDigita**l.com

Profile of exhibitors

Allia Innovation Lab

The Innovation Lab is a state-of-the-art facility that is properly tooled up with a range of gear for testing, proto-typing and simulation as well as some useful media stuff to help with the marketing side. The Innovation Lab supports our other fully funded programmes and still manages to keep costs low as membership of the Innovation Lab is just £36 a month. https://seriousimpact.co.uk/innovation-lab/

Estatom

Estatom has developed a small, fast and highly secure "Virtual Processor". It combines the functionality of an Operating System, Integrated Development Environment and an intelligent, amorphous Object database. This we call Fornax. To function on any architecture (from the smallest micro-processor to mainframe) all that is required is a Fornax port which provides the hardware interface to the OS or processor on the one side, and the universal Virtual Processor on the other. Estatom is building an ONAP port. This provides a stable platform or base for mobile and IoT services to be delivered in an NFV environment. Fornax de-risks the implementation of solutions for CSPs, customers, users and solution providers who currently face challenges with the maturity, performance, scalability, reliability, security and integration of NFV solutions. **www.estatom.com**

InterDigital

See sponsor profile above. **www.interdigital.com**

Orion : RAN Slicing System over LimeSDR

Emerging 5G mobile networks will become multiservice environments, enabling the dynamic deployment of services with a diverse set of performance requirements, accommodating the needs of mobile network operators, verticals and over-the-top (OTT) service providers. Virtualizing the mobile network in a flexible way is key for a cost-effective realization of this vision. While virtualization has been extensively studied in the case of the mobile core, virtualizing the radio access network (RAN) is still at its infancy. Hence we developed Orion, a novel RAN slicing system that enables the dynamic on-the-fly virtualization of base stations, the flexible customization of slices to meet their respective service needs, and which can be used in an end-to-end network slicing setting. Orion guarantees the functional and performance isolation of slices, while allowing for the efficient use of RAN resources among them.

Quortus

Quortus develops and delivers the industry's leading virtualized mobile core solutions. Our highly flexible 'cloud native' core network products are used by leading mobile operators – from established Tier 1s to new entrants leveraging innovative 5G-aligned technologies. We have a hard-won reputation for innovation, enabling differentiated service offerings for cellular use cases such as MVNO/MVNEs, private LTE, government and IoT for industry and enterprises. Quortus solutions cost-effectively scale from single-figure user counts to millions of connections, enabling "pay-as-you-grow" business models. We support any cellular technology and any network architecture, with a particular focus on 4G LTE and the evolution to 5G. **www.quortus.com**

SureLink-XG

SURELINK-XG In order for 5G to deliver on the vision of "always sufficient rate to give the user the perception of infinite capacity," a major challenge remains when dimensioning the network for the dominant data transmission protocol on the internet, the Transmission Control Protocol (TCP). TCP data transfers use adaptive algorithms that maximize the use of the available capacity and it is thus difficult to predict the steady-state performance when subscribers share a link. SureLink-XG is designed to re-define congestion in terms of the subscriber connection speed and to use readily available network data to determine the network capacity requirements. **www.trueux.net**

Zeetta Networks

Zeetta Networks is a spin-out from the University of Bristol offering Open Networking solutions based on a proprietary network operating system NetOS® that provides a single, converged and secure platform for monitoring, managing and automating the operations of heterogeneous networks. NetOS® uniquely manages simultaneous data flows between different types of connected devices and sub-systems including Wireless, Optical, Ethernet and Internet-of-Things (IoT) devices. It addresses the increasing demand for network solutions capable of managing not only existing large-scale infrastructure networks but also the emerging next-generation network technologies and frameworks such as 5th generation mobile networks (5G) and IoT. NetOS® uses Software Defined Networking (SDN) and Network Virtualisation (NV) to replace expensive hardware networking equipment and human intervention for provisioning and intelligent management of network resources. This enables greater efficiency, capacity, security and resilience across the network. **www.zeetta.com**