



## Digital Delivery and Content SIG Event 'Virtual Reality – Technology Revolution or just a Game?'

7 June 2016

Hosted by Ravensbourne

SIG is championed by **David Crawford** of Ravensbourne/University of Essex, **Tim Cook**, Independent Consultant, **Russell Inman** of BBC Engineering, **Chris Noakes** of BBC Research & Development and **Sami Susiaho** of BSkyB

Venue: Ravensbourne, 6 Penrose Way, Greenwich Peninsula, London, SE10 0EW

### AGENDA

**13:00** Registration and networking with refreshments

**14:00** Introduction to CW from **Abhi Naha**, CW (Cambridge Wireless Ltd)

**14:05** Introduction to **Digital Delivery & Content** SIG from **David Crawford**, Ravensbourne/University of Essex

**14:15** Session chaired by SIG Champion, **Russell Inman** of BBC

**“Innovation Approaches to Digital Storytelling”**

**Zillah Watson**, Editor **BBC R&D Internet and Future Services**

Having run a large number of production experiments and trials in this area - investigating VR/AR for documentaries and storytelling techniques especially for News, Zillah is able to talk knowledgeably about the pitfalls and problems of creating good VR.

**14:35** Q&A

**14:45** Session chaired by SIG Champion, **Tim Cook**, Independent Consultant

**“The Application of AR in Smart Field Service”**

**James Bambrough**, **James Maynard** and **David Taylor**, Fujitsu

The most valuable asset in an organisation is people and the knowledge that they have, built over many years of working with equipment in all manner of operating environments. An aging workforce coupled with exponential advances in technology mean we have to find ways of keeping people connected and educated in the field. Not only do we need to interact with the equipment we are servicing, but also the need to gain access realtime to information and experts who can help resolve the issues. Fujitsu will show experiences of working with Field Engineering Services teams, and demonstrate how user driven augmented reality solutions, coupled with industrial wearable technology can revolutionise the way we work in the field.

**15:05** Q&A

**15:10** **“Live 360 – a stitch in time”**

**Cliff Dive**, VP Business Development and **Graham Rushton**, Principal Engineer, **Argon Design**

In this presentation we will start by recounting the R&D journey that led us to hardware based live video stitching, via projects investigating SLAM (simultaneous localization and mapping) and stereo depth perception. We will then talk about our study of the stitching challenge, and the possible technical approaches – the challenge in real time is balancing image quality, processing power and physical demands of the application. We will describe where we are right now, the proposed road-map and the challenges ahead.

**15:30** Q&A

**15:35** **Refreshments and networking**

**16:05** Session chaired by SIG Champion, **Chris Noakes**, BBC Research & Development

**“Virtual Reality: Exploring the Verticals”**

**Edward Miller**, Specialist in Interactive Imagery

The rise of virtual reality headsets like Oculus Rift is changing the way game developers create content. However, it's not just the gaming industry that will be affected by the rise of VR. Having been in hibernation for the past decade, VR is finally coming of age and is set to grow by 13,000% over the next 3 years. This presentation will look at the technology which is radically transforming the industry, discover the opportunities VR offers outside the entertainment space and discuss how forward thinking industry leaders can harness the power of VR.

**16:25** Q&A

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**16:30** Panel session chaired by **SIG Champion, David Crawford, University of Essex/Ravensbourne** with speakers and special guests, **Muki Kulhan**, Executive Digital Producer, **BBC The Voice UK** and **Martin Uren**, Associate Senior Lecturer in Broadcast Technology, **Ravensbourne**.

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**16:55** **Complete online evaluation – a link will be emailed to you.**

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**17:00** **Event closes**

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With the permission of the speakers, presentations will be loaded to the CW website on the day after the event.

### Profile of organisers

#### **CW (Cambridge Wireless Ltd)**

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](http://www.cambridgewireless.co.uk)

### Profile of host

#### **Ravensbourne**

Ravensbourne is an innovative, industry-focused university sector college located in the heart of London. They champion creativity and collaboration, dedicated to giving learners specialist skills and opportunities for outstanding careers in digital media and design. With a community of approximately 2,400 students, they offer practically focused digital media and design courses from pre-degree, undergraduate and postgraduate to professional short course level. Driven by industry standards and supported by the latest high-performance technology, Ravensbourne produce highly employable and enterprising graduates. Ravensbourne also hosts alongside its student community more than 100 creative technology businesses that utilise its leading edge technologies and media resources, and collaborate with its student body and industry partners. [www.ravensbourne.ac.uk](http://www.ravensbourne.ac.uk)

### Profile of SIG Champions

#### **Professor David Crawford, University of Essex/Ravensbourne**

David Crawford is a Professor at the University of Essex and Ravensbourne in the UK, with interests in next generation networks and 'beyond HD' multimedia services. He is well-known in the engineering and business fraternities, having worked for over 40 years in the telecoms and broadcast industries and academia. David lectures on 'ICT', 'Networks' and 'Broadcast Technology', and is Director of a small high tech start-up in France. He also runs his own technical Consultancy Company, and chairs and presents regularly at technical and business conferences. David is a Member of the Royal Television Society, a Board and Council Member of the Institute of Engineering & Technology (IET), and is Executive Producer for the annual IBC Multimedia Conference in Amsterdam.

#### **Tim Cook, Independent Consultant**

With over 30 years in the Telecoms, Media & Technology sector, Tim has held a number of senior roles where he has operated at CXX level on a Global basis. During his time with BT, he was the Director of a joint venture with France Telecom which pioneered in-flight telephony. His international experience involved managing a Telco. integration and heading up a Global Customer Service Team of over 400 people. After 9 years he has recently left Arqiva where he was Head of Strategic Business Development for the Terrestrial Broadcast Division. Currently he is working on broadcast/media consultancy engagements.

#### **Russell Inman, Executive Product Manager, Media Networks, BBC**

Russell holds the post of Executive Product Manager, Media Networks at the BBC, responsible for the development, delivery and strategy of the BBC's broadcast connectivity. He has also worked as a Senior Network Architect in the BBC's 'Strategy & Architecture' division. Prior to joining the BBC, Russell launched a consultancy practice in 2011 and was a technology consultant operating in the broadcast and wireless sectors. Prior to that, Russell was with Arqiva - a communications and media services company providing infrastructure for the broadcast, mobile communications and satellite markets - where he held the post of Technology Director. Before joining Arqiva, he worked for the BBC, Crown Castle International and National Grid Wireless. He has led, and been a key member of, teams which have developed new products and platforms in sectors such as digital TV, mobile TV, 3G and Smart Metering. At Crown Castle, he was

a member of the Freeview launch team working directly with Crown Castle's launch-partner companies; BBC and BSkyB. He served as Vice-President, Engineering at Modeo which pioneered a mobile TV service in New York. Russell is a Chartered Engineer and holds an Upper Second Class Honours Degree in Electronic Engineering. He is a Fellow Member of the Institution of Engineering and Technology. For more information, please visit [www.bbc.co.uk](http://www.bbc.co.uk)

**Chris Noakes, Principal R&D Engineer, BBC Research & Development**

Chris is Head of Distribution Core Technologies Section at BBC Research & Development. With over twenty-five years' experience in Broadcasting R&D, Chris has been involved in the development of digital television since 1994, including as a key contributor to the DVB-T2 technical study group, and editor of the DVB-T2 specification. He is also Chair of the RF Group of the UK Digital Television Group (DTG). The work of Distribution Core Technologies Section includes projects investigating broadcasting to mobile devices, the next generation of wireless cameras, TV White Space devices, IP Stagebox and High Efficiency Video Compression. For more information, please visit [www.bbc.co.uk](http://www.bbc.co.uk)

**Sami Susiaho, BSkyB**

Sami Susiaho has worked for European blue chip MNOs and ISPs for the last 15 years. During the last few years, at BSkyB as the Head of Edge Technologies of the Cloud business unit, focusing on WiFi R&D and helping the business to build one of the most advanced WiFi hotspot networks in the world. He researches technologies used on the edge of the network; last mile connections, wireless and wired technologies. Sami runs the Wi-Fi test lab, sits on various industry workgroups and contributes in numerous efforts towards the best possible user experience on WiFi. For more information, please visit [www.corporate.sky.com](http://www.corporate.sky.com)

**Profile of speakers**

**James Bambrough, Head of Applied Digital Technologies, Fujitsu**

James Bambrough is Head of Digital Applied Technologies within Fujitsu's Digital business and a Fujitsu Distinguished Engineer. He is responsible for delivering solutions that pull together the best in industry hardware and software to rapidly deliver business outcomes with an agile approach. James has over 15 years in the IT industry with Fujitsu, Siemens and CSC, originally specialising in application development, cloud computing and platform integration, he now focuses on leading innovative technology integration particularly in the early adopter space where software solutions are leveraged to drive extra value.

**Cliff Dive, VP Business Development, Argon Design**

Since graduating from Oxford with an engineering degree, Clifford has enjoyed working on a broad range of leading edge software and electronic product developments. Starting in the days when disks were 8 inches and floppy, and 64K was a lot of memory, he led the engineering team that developed the robotic camera control system for first UK parliamentary TV broadcasts. He has since held technical and commercial leadership roles in product companies and consultancies on products ranging from embedded wireless devices to data visualisation. He has experienced the attractions of working in such world-renowned companies as Cadence and Qualcomm as well as early stage start-ups. As VP Business Development, Clifford is responsible for growing Argon Design's consultancy business and has a special interest in Argon360, which is IP for high quality real-time video stitching on a hardware platform.

**James Maynard, Offering Management Director - Global IoT & Innovation, Fujitsu**

James is Offering Management Director of the Global IoT & Innovation business and responsible for the global portfolio of IoT Solutions, Wearables, Sensors and Innovation products. With over 15 years of experience in Technology industries, during his career he has helped to develop and deliver technological innovation with Panasonic and Siemens before spending four years at Vodafone responsible for Commercial Purchasing and Accessory Category Management until he joined Fujitsu in 2011.

**Edward Miller, Specialist in Interactive Imagery**

Edward is an entrepreneur working in the field of interactive imagery. Having started his first company at university, he has produced interactive imagery for the likes of BBC, ESNP, Vogue, NHS, Daily Mail and Royal Ballet. He has worked in several startups centered around virtual reality including Immersivly & Medical Realities. In 2014, he produced the first news documentary for the Oculus Rift & captured the first 360 degree video of a live surgical operation at the Royal London Hospital.

**Graham Rushton, Principal Designer, Argon Design**

Bio to Follow

**David Taylor, Solution Incubation Architect, Digital Applied Technologies, Fujitsu**

David is the Solution Incubation Architect for the Digital Applied Technologies (DAT) business. He is responsible for innovation focussed development of business solutions through the introduction, and combining of, exciting new technologies and services. He provides customers with a chance to experience new approaches to technology use that may not have previously been considered, through practical application such as real proof of concepts. David has over 20 years of experience in Technology industries—from his early days as a programmer to the design of large scale customer environments, but now focusses his time on innovation, and therefore has broad experience in a significant number of IT areas. He was awarded Fujitsu Distinguished Engineer status in 2015.

**Zillah Watson, Editor BBC R&D Internet and Future Services**

Zillah is a leading BBC expert on virtual reality, which draws upon her expertise developed in BBC Research and Development and in previous senior editorial roles in journalism in TV, radio and web. She's an experienced public speaker and has recently spoken at Wikimania, Geneva Documentary Festival, Munich Documentary Festival, iDocs and chaired Dutch VR days. She leads on innovative approaches to digital storytelling, including pioneering 360 storytelling for BBC News. She's developed relevant and practical approaches to transferring emerging technologies into TV, radio and web production. Other recent work has ranged from creating a story database for the longest running soap opera in the world to pioneering work in digital on-line media archives.

### Profile of Additional Panellists

**Muki Kulhan, Executive Producer, Muki International (BBC The Voice UK)**

With a well-respected pedigree producing digital and interactive content across platforms, Muki is a creative media executive and award-winning producer within music, entertainment, broadcast, VR and digital innovation. She currently heads up all digital production for BBC One The Voice UK as Executive Digital Producer focusing on immersive 360VR, creative web and app editorial and talent-led social engagement. Formerly MTV International's first-appointed Director of Digital Media after 10 years growing their digital platforms, she has since launched her own digital production arm, Muki-International Ltd, producing creative editorial, live streaming, VR and social content for global youth and entertainment brands. Twitter @mukiapproved

**Martin Uren, Associate Senior Lecturer in Broadcast Technology, Ravensbourne**

Martin has 35 years of broadcasting experience as a broadcast engineer at the BBC and ITN, and as a training consultant. He continues to run highly engaging and innovative workshops and training courses for major broadcast clients while being an Associate Senior Lecturer at Ravensbourne. He has developed an industry-wide reputation for explaining cutting-edge technologies to broadcast professionals through training courses, conference presentations, workshops and technical articles. He has a passion for 3D and VR that is pursued through filmmaking and academic research. He completed a practice-based MSc in 3D Stereoscopic Media, working on four short 3D films that were accepted in six international 3D film festivals. He is currently researching the nature of the immersive experience and planning a live-action VR production as part of this research.