

Healthcare SIG
'5G in Healthcare'
12 November 2019
Hosted by Plextek

This SIG is championed by Leila Ali of **Digital Health Cambridge**, Peter Ferguson of **Arm**, Peter Jarritt of **NIHR Brain Injury HTC**, Siddhi Trivedi of **Beowulf Proof Works**, Paul Winter of **TTP Group**, and Nigel Whittle of **Plextek**

Venue: The Nucleus, Chesterford Research Park, Little Chesterford, Saffron Walden, CB10 1TS

AGENDA

13:30 Registration and networking with refreshments

14:00 Introduction to CW, **Simon Mead**, CEO, **CW (Cambridge Wireless)**

14:05 Sponsor welcome, **Dr Nigel Whittle**, Nigel Head of Medical & Healthcare, **Plextek**

14:10 Introduction to 5G and Healthcare, **Julian Hildersley**, Consultant, **TTP Group**

14:20 Introduction to Healthcare SIG from **SIG Champion Paul Winter**, **TTP Group**

Session chaired by SIG Champion, Paul Winter, TTP Group

14:25 **Emerging technologies like 5G and IoT devices can bring valuable changes to the health and social care sector but only if they are affordable and accessible to all.**

Ann Williams, Commissioning and Contracts Manager, Adult Social services, **Liverpool City Council**

Rosemary Kay, Project Director, **Liverpool 5G Testbed**

This session will explore how 5G can lighten the load for health and social care at this critical point – ageing populations, reduced funding and analogue tele-health services switching off. If we can ensure poorer communities benefit equally from health/social care innovations/technologies. An ultra-fast, reliable, large-data-supporting technology is needed to run these technologies, which people in digitally deprived areas can't afford. What key areas of health and social care provision could benefit most from a move to harness emerging technologies like 5G? What role does effective engagement between designers, disrupters, technology SMEs and public sector bodies (council, hospitals, care providers) have in creating health technologies that's useful and easily adopted? Liverpool 5G Health and Social Care is providing a free 5G-style community intranet to volunteers in Kensington. The volunteers are trialling new technologies that support them to live independently with conditions like diabetes (anti-loneliness apps, home sensors, video-to-pharmacy medi-link.)

14:45 Q&A

Connected Ambulance: 5G in healthcare

14:50 **Gayle Cogswell**, **Industry 4.0 Programme Director**, **WM5G Limited**

Health and wellbeing is a key focus of the Urban Connected Communities 5G testbed in the West Midlands. This presentation will look at the eco-system required to support widespread 5G adoption and the combined efforts being made to build strong connectivity and data foundations, on which demand-led Use Cases are being trialled.

15:10 Q&A

15:15 **Refreshments and networking**

Session chaired by SIG Champion Leila Ali, Digital Health Cambridge

15:45 Remote diagnostics in the Internet of Skills era

Dr Toktam Mahmoodi, Director, Centre for Telecommunications Research (CTR), **King's College London**,

This talk will discuss opportunities in the healthcare raised by the realisation of the Internet of Skills. We will talk about how enablement of ultra-low latency communication by 5G, together with edge intelligence, can make teleoperation in healthcare a reality. The talk will also address some of the developments at King's in this area including remote diagnosis and intervention, with Tactile operated medical robots [1] and diagnosis on the move with remote controlled ultrasound in an ambulance [2].

[1] <https://www.ericsson.com/en/cases/2017/kings-college/kings-healthcare>

[2] <https://www.kcl.ac.uk/archive/news/informatics/newsrecords/informatics-researchers-showcase-real-time-5g-interaction-between-hospital-and-ambulance-at-mobile-world-congress-2019>

16:05 Q&A

Value based healthcare- the population risk problem

16:10 William Wynn-Jones, Harkness fellow, **Centre for Surgery** and **Public Health and Harvard Medical School**

The current global drive towards value-based healthcare aims to try and strengthen the link between reimbursement and its direct and indirect outcomes. In the US where much of the early development in these new reimbursement models has taken place, a key hurdle to the successful implementation has been how to assess, monitor and contain risk within large populations. Better remote monitoring and assessment technology, educational tools and communication platforms are and will continue to play a key role in dealing with uncertainty as these models continue to develop and be rolled out nationally.

16:30 Q&A

16:35 Panel session with all speakers chaired by SIG Champion Paul Winter, TTP Group

17:10 Event wrap up

17:20 Event close

With the permission of the speakers, presentations will be loaded to the CW website the week 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

Profile of host

Plextek

Plextek is a consultancy at the heart of the Cambridge technology revolution. With a 30 year history of providing complex engineering solutions, we continuously innovate to push the boundaries of engineering and technology today. Plextek provides product design, software development, remote monitoring and wireless communication systems capabilities, coupled with a deep understanding of the life science sector. We hold the ISO 13485 certification for medical devices and when working with Plextek you get access to resources that can deliver tangible benefits for your organisation. We look forward to meeting you! www.plextek.com/markets/healthcare/

Profile of SIG Champions

Leila Ali, Digital Health Cambridge

Leila is passionate about applying innovative approaches in bridging the worlds between health and technology. She has worked in the health sector for over 10 years and understands the importance of identifying opportunities of engagement and the evolving needs of patients/clients. She has worked in Sweden, UK and Kenya and has been instrumental in implementing innovative health promotion initiatives and identifying potential avenues for improving user engagement. She has previously worked with product planning, putting the user at the centre of the design process and ensuring a holistic view is taken of the product experience. She has the ability to horizon-scan, spot needs, and creatively reinterpret a broad strategy. Leila is also the founder and organiser of Digital Health Cambridge, a meet-up group that brings together various stakeholders, clinicians, investors and startups in Cambridge to foster a multi - stakeholder partnership. She is currently an eHospital support link at Cambridge University Hospitals NHS Foundation Trust, where she trains and supports colleagues regarding best practice using Epic (electronic patient record system). A digital strategy which enables clinicians to use the latest in computer technology to help them to consistently provide high quality patient care.

Peter Ferguson, Arm

Peter is director for healthcare technologies at Arm and has been actively involved in the delivery of mobile and healthcare solutions since starting his Medical Electronics PhD in 1994. Based in Cambridge, UK, Peter is responsible for driving Arm's health strategies in Medical Sensors and Genomics. His remit is helping the healthcare industry to utilise Arm's high efficiency technology in developing new products and services. Peter has more than 20 years' experience working in the healthcare, mobile tech and pharmaceutical technology market and has been instrumental in delivering innovative mobile health solutions including wearable ECG, Mobile Devices, Adverse Event Systems and Portal Hospital solutions in the UK and China. arm.com

Dr Peter Jarritt, NIHR Brain Injury HTC

Peter is currently Deputy Director and technology theme lead for the National Institute for Health, Health Technology Cooperative for Brain Injury. He is an Honorary Fellow of the Royal College of Physicians as well as a Fellow of Institute of Physics and Engineering in Medicine (IPEM). He is also a member of the Advisory Board of the Centre for Healthcare Photonics at the Centre for Process Innovation. Peter has more than 20 years' experience directing and delivering a comprehensive range of Medical Physics and Clinical Engineering services at the highest level. Most recently Peter was the Clinical Director and Head of Medical Physics and Clinical Engineering at Cambridge University Hospitals NHS Foundation Trust. Notable projects under his leadership were introduction of RFID technology at Addenbrookes to enhance utilization of medical devices in the patient environment and the integration of medical devices into clinical information systems in an e-hospital programme. Peter's other Career highlights includes Chief Executive of Northern Ireland Regional Medical Physics Agency. He also served as President of the IPEM promoting the use of Physics and Engineering for patient benefit at national and international level. brainhtc.org

Siddhi Trivedi, Beowulf Proof Works

With 30 years of Health & Education innovation Siddhi provides support and advice to start-ups and entrepreneurs globally. With a background in Pharmacology, Business Management and Coaching, she enjoys mentoring, advising start-ups and young people to help them achieve their aspirations. She wants to foster collaborations and is a passionate connector and actively involved in many networks including Cambridge Wireless, London Tech Advocates Blockchain Steering Group, and, as License holder for TEDxLeicester, a member of the global TEDx tribe of shapers and thinkers. Her experiences in health and education innovation have been gleaned within the NHS, Education, Consultancy and Pharmaceutical sectors; and has managed projects with budgets of up to £32M. Currently she is focused on the application of AI and Blockchain technology for improving health and create social impact. As an experienced businesswoman in leadership, relationship management and effective project management, she believes success is based on building long-term sustainable partnerships and collaborations both at a local and global level.

Dr Nigel Whittle, Plextek

Nigel is Head of Medical & Healthcare at Plextek, spearheading engagement with a range of clients in the medical device sector, helping them develop innovative technology around sensors, data collection, communications and related areas. Nigel has over 25 years' experience in the global life science industry, in a wide range of senior scientific, commercial and managerial roles. He conducted research work at Genentech and Celltech, then at Cantab Pharmaceuticals he was responsible for all company product development, taking proprietary products into late-stage Clinical Trials. With the IP Group he established a programme of technology commercialisation from Kings College London, including start up and flotation of companies. Later, working for UK Trade & Investment, Nigel worked with a portfolio of overseas pharmaceutical companies to secure high-level investment into the UK's R&D capabilities. More recently he has worked

as a business consultant both as an independent and at Sagentia. His current interests include the development of wearable technology to support clinical studies, and the use of monitoring systems for assisted living. www.plextek.com

Paul Winter, TTP Group

Paul Winter is a programme manager and RF engineer in the Communications and Wireless group at TTP. He has led numerous projects in commercial, industrial and healthcare sectors developing connected devices and precision instrumentation. Paul has a heritage in developing products integrating multiple wireless standards including GPS, GPRS, Wi-Fi, Bluetooth and proprietary ISM band radios, deployed within multi-sensor systems for in-home and on-body applications, often coupled to 'Cloud' based analysis and visualisation services. In healthcare Paul has applied aspects of wireless, antennas and electronics to a number of medical devices including inhalers, glucose testing and point of care diagnostic instruments. Paul has also led several incubation projects for TTP's Carbon Trust Incubator, covering a wide range of cutting edge technologies. Paul joined TTP in 2006; prior to this he worked as a radio engineer for Global Communications developing high volume consumer in-home satellite and digital TV distribution equipment, as well as portable equipment for the 'on-location' broadcasting industry. Paul has a Masters degree in Electrical & Electronic Engineering from the University of Wales, Cardiff. He is a member of the Institute of Engineering and Technology, the Royal Academy of Engineering and is a Chartered Engineer. ttpgroup.com

Profile of speakers

Gayle Cogswell, West Midlands 5G (WM5G)

Gayle is Programme Director at West Midlands 5G (WM5G) responsible for the Citizen Wellbeing 5G testbed trials. In collaboration with specialists from University Hospital Birmingham and surrounding healthcare bodies she will drive adoption of 5G applications that bring the biggest benefits to the health and wellbeing of the region. Gayle has over 20 years' experience in the telco industry spanning 4G, wifi, Big Data and 5G usage in Europe, Latam and East Asia.

Rosemary Kay, Liverpool 5G Testbed

After completing a degree in Pure Maths, Rosemary started her career as a graduate programmer, spending 21 years in the private sector, on the design, development and manufacture of secure, high grade communication equipment. 12 years ago Rosemary set up her own business, RLK Partnerships, providing business support and facilitating collaborative working across sectors. Rosemary also spent 18 years as an Associate Lecturer on Open University programmes, including the NHS Leadership Academy and MBA, specialising in entrepreneurship and leadership. Rosemary has headed up the eHealth Cluster Ltd from 2015, bringing care providers, technology companies and public bodies together to drive health and social care innovation for the Liverpool City Region. She has published reports and practical guidance on procurement and commissioning. Rosemary has led the eHealth Cluster involvement for the Liverpool City Council Innovative procurement project to digitise home care services and is currently leading the Liverpool 5G Health & Social Care Testbed.

Dr Toktam Mahmoodi, King's College London

Dr Toktam Mahmoodi is Director of the Centre for Telecommunications Research (CTR) in King's College London, where she has been member of the academic faculty since 2011. Previously, she was visiting research scientist at F5 Networks, research associate in Imperial College London, Mobile VCE researcher, and telecom R&D engineer. Toktam is and has been involved in number of European FP7 and H2020 projects on 5G mobile networks, vehicular communications, and Software-defined Networking. She is executive editor of Transactions on Emerging Telecommunications Technologies, series guest editor of JSAC on network softwarization, and area editor of IEEE Communications Standard Magazine on management & orchestration. Her research focuses on the areas of mobile and cloud networking, and includes ultra-low latency networking, network virtualisation, mobility management, network modelling and optimisation. She also works on applications of mobile communications in the healthcare, smart cities, emergency services, industrial networks and intelligent transportation.

Ann Williams, Liverpool City Council

Ann Williams is Commissioning and Contracts Manager of Adult Social services at Liverpool City Council, where she finds innovative ways to deliver care against a decreasing budget and increasing needs. Ann has played a lead role in securing the 5G testbed trial for Health and Social Care at Liverpool. As part of the EU's STOP&GO programme she focused on digitalising domiciliary care services and introducing IoT sensors to homes. She worked in local and regional Citizen Advice Bureau management for 19 years. Ann is driven by a strong sense of social justice. Working with the most marginalised in society has heightened her awareness of societal inequalities and the current financial challenges to household and public budgets. Ann is a member of Food Standards Agency's (FSA) Advisory Committee on Microbiological Safety of Food and of the Campylobacter Group, where she's working on a report into controlling campylobacter in food supplies. She is Vice Chair of Liverpool's Central Local Research Ethics Committee and a core member of the National Institute of Health and Care Excellence (NICE) Public Health Advisory Group.

William Wynn-Jones, Harkness fellow, Centre for Surgery and Public Health and Harvard Medical School

Most recently William was a 2017-18 U.K. Harkness Fellow in Health Care Policy and Practice, based at the Brigham and Women's Hospital in Boston. During this fellowship he was a health policy researcher working extensively with national military reimbursement data to determine the scope for introducing value-based healthcare models at scale into the US military healthcare system, TRICARE. Before that he completed a healthcare management fellowship with HCA Healthcare UK, where he served as the Specialist Advisor to the Chief Medical Officer. At HCA, William received an HCA innovation award and was shortlisted for an HSJ Rising Star Award for his work in developing a new healthcare management training programme and his research into cost prediction in cardiac surgery. Following his Harkness fellowship year in the US William resumed his senior anaesthetic registrar training in North West London and is currently undertaking a senior clinical fellowship in obstetric anaesthesia at Chelsea and Westminster Hospital. As a junior registrar, he initiated and led a national health-marketing project with the charity Best Beginnings, NHS London and the Department of Health in infant nutrition. Previously he was a clinical fellow on the National Medical Director's Fellowship under Sir Bruce Keogh and was based at the Association of British Healthcare Industries and was seconded to NHSE and HIN. During that fellowship he worked closely with the UK medical device industry, exploring and communicating the value of the newly established Academic Health Science Network. He has since undertaken fellowships in the medical device industry exploring device design, evaluation and pricing. William holds a Master's degree in Health Economics, Policy and Management from the London School of Economics and completed his Medical Degree at King's College London. He is a member of the Royal College of Physicians and a fellow of the Royal College of Anaesthetists.