Healthcare SIG

'Medical device security: threats and solutions'

12 September 2017

Sponsored by Arm Limited

This SIG is championed by Peter Ferguson of **Arm**, Collette Johnson of **Plextek Consulting**, David Walker of **Philips Research Laboratories**, Paul Winter of **TTP Group,** and Peter Jarritt **of NIHR Brain Injury HTC**

Venue: St Catharine's College, University of Cambridge, Trumpington St, Cambridge, CB2 1R

AGENDA

12:45	Registration and networking with lunch
13:40	Introduction to Healthcare from Peter Ferguson of **Arm Limited**
13:50	Welcome from event supporter, **Arm Limited**
14:00	**Hugo Vincent, Principal Research Engineer, Arm Research** **Security Challenges and Opportunities for Connected Medical Devices** While connected devices and IoT are still relatively new fields, there is already general acceptance of a set of best practices for how to secure them, as well as roadmaps across the industry to drive up the level of security achieved over time. However, medical devices can often have different risk/reward and cost sensitivities compared to many other uses for IoT. This talk will summarise industry best practices for achieving security in connected devices, relate these to the risks and benefits unique to medical devices, and explore some of the challenges and opportunities that emerge.
14:25	Q&A
14:30	**Pat Nash, Managing Director, InVMA Limited** **Building Secure IoT Medical Devices** InVMA are setting out on a journey of using their experience in safety critical control systems and applying them to the healthcare market. After the 25 Minute presentation attendees, will be aware of some of the challenges involved in protecting medical devices and their users, know where to start to address the challenges and simply go from the “unknown unknowns to the known unknowns.” To do this Pat will review some of the recent news, go on to discuss the “attack surface” and the security implications and then discuss the operationalisation of the ongoing review and management your security posture. Pat will discuss the implications through a use case and architecture adopted and wrap up with a question and answer session. The presentation is aimed at people who want to understand the main issues and a high-level approach to addressing some of them..
14:55	Q&A
15:00	**Andrew Tsonchev, Director of Cyber Analysis, Darktrace** **Using AI to stop Ransomware: A Real-Life Case Study on how the Enterprise Immune System Detected and Responded to Wannacry** This session will explore the implications of ransomware; why traditional security tools are not sufficient to defend against it; how to defend against subtle, novel attacks in the future using an ‘immune system’ approach and how to achieve 100% visibility of your network. It will look at how machine learning and artificial intelligence was used to identify the Wannacry attack before it was able to spread.
15:25	Q&A
15:30	**Refreshments and networking**
16:00	**Michelle Ellerbeck, Information Governance Lead, Cambridge University Hospitals NHS Foundation Trust** **General Data Protection Regulation (GDPR)** Michelle will provide an overview of the GDPR and the impact on the UK. The GDPR will apply in the UK from 25 May 2018.
16:20	Q&A

16:25	**Caroline Rivett, Director, Risk Consulting, KPMG (Information Protection in Life Sciences & Health)** **Medical Device Security – Reducing the Risk** This presentation explores the risks of insecure medical devices to hospitals and patients and the potential approaches to reduce these risks.
16:45	Q&A
16:50	Panel session with all speakers chaired by SIG Champion, Paul Winter, TTP Group
17:30	**Event closes**
17:45	**Drinks reception**

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

Arm
Arm technology is at the heart of a computing and connectivity revolution that is transforming the way people live and businesses operate. Our advanced, energy-efficient processor designs are enabling the intelligence in 100 billion silicon chips and securely powering products from the sensor to the smartphone to the supercomputer. With more than 1,000 technology partners including the world's largest business and consumer brands, we are driving Arm innovation into all areas compute is happening inside the chip, the network and the cloud. **www.arm.com**

Profile of SIG Champions

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 utilize 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. **www.arm.com**

Collette Johnson, Plextek
Collette works for Plextek Consulting in medical business development, helping companies with their strategic positioning relating to product development. Previous to working at Plextek she worked at NHS innovations with a lead role in bringing together industry and clinical organisations for product adoption and also was the programme lead for the national SBRI healthcare programme, whilst in this role she focussed on the mHealth and telehealth space and developed a network bringing together, industry, clinical and academic stakeholders. She also worked in a strategic role in healthcare at Cambridge Consultants for world leading corporate organisations and highly innovative start-ups. **www.plextek.com/design-services/medical**

David Walker, Philips Research Laboratories
David is a Senior Scientist with Philips Research Labs. David has worked on a variety of projects beginning over 25 years ago with expert systems for compact disc based multimedia systems. He went on to work on projects for Philips Consumer Communications and first-generation internet browsers for cell phones. This included the development of novel mobile applications for education and entertainment. More recently David has worked on home healthcare and developed next generation telehealth and telecare systems. And all these interests are now brought together with participation in projects in mobile health monitoring. Throughout his career David has pushed for user centred design and delivered systems that are sensitive to the needs and abilities of the end user. He is especially interested in novel technologies that can improve the user experience and is currently exploring use case scenarios for NFC (Near Field Communications). **www.philips.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 Charted Engineer. **www.ttpgroup.com**

Profile of speakers

Michelle Ellerbeck – Information Governance Lead, Cambridge University Hospitals NHS Foundation Trust
Information Governance Lead at Cambridge University Hospitals NHS Foundation Trust, with over 10 years' experience in information governance and the Trust data protection officer for the last 2 years. Responsible for implementing GDPR for the Trust. **www.cuh.nhs.uk/**

Pat Nash BSc (Eng) Hons MIET – Managing Director, InVMA Limited
Pat is an experienced industrial control engineer and systems / dbase architect with 20 years' experience of developing safety critical control and business systems in Oil and Gas, Industrial and Food Production industries. He started his career with Howden Compressors, as a control engineer before setting up InControl Systems limited. He has developed control systems for clients as diverse as Kidde Fire, Tata Steel and Ready Egg. He has taken the architectural lead in developing the ThingWorx based systems for Centrax, Rotork, and GCE. Pat has a BSc (Eng) Hons, Electronics, Computing & Systems Engineering from Loughborough University and is a Member of the UK's Institute of Engineering and Technology. **www.invma.co.uk/**

Caroline Rivett – UK KPMG lead on Cyber Security and Privacy in Life Sciences & Healthcare
Caroline leads KPMG's UK cybersecurity team focusing on our life sciences clients. She has over twenty years' experience of managing and reviewing technology and risk. Over the last five years she has specialised in the protection of sensitive information in health and life sciences. Caroline is the KPMG Account lead for cybersecurity and privacy services for a number of KPMG's global pharmaceutical and research clients. Projects have included privacy strategy and contract remediation, production systems security and specialist security testing.
Caroline recently hosted a conference on 'Information Protection in Digital Health' with attendees from pharmaceuticals, research, the NHS, construction, and academia. She is a Council member for the Royal Society of Medicine's Telehealth & eHealth Council, a member of the Global Alliance for Genomic and Health Data Protection, and speaks at conferences on cybersecurity in pharmaceuticals, connected medical devices and digital health.
Prior to joining KPMG, Caroline co-founded a company which digitised and extracted data from medical health records which was subsequently sold to a US corporation. She developed the UK business focusing on life insurance companies and worked with them on security and protecting their customers' sensitive personal data.

Caroline has led a number of change programmes. She previously set up a global shared services centre for a Big Four consulting company performing big data analysis for global clients. Whilst at Aviva she led a finance programme which analysed and costed technology services. **www.kpmg.com/uk**

Andrew Tsonchev – Cyber Security Specialist, Darktrace
Andrew is a technical specialist in cyber security and threat analysis, with expertise understanding network monitoring and advanced threat detection. Before joining Darktrace, Andrew worked as a Security Researcher at Cisco Systems analyzing vast data sets to uncover new trends and developments in the threat landscape. His findings have been widely reported in leading media outlets, including PC World, CRN, SecurityWeek, TripWire, and the New York Times. He holds a first-class degree in physics from Oxford University, and a first-class degree in philosophy from King's College London. **www.darktrace.com/**

Hugo Vincent, Principal Research Engineer, Arm Research
Hugo is a researcher focussed on security in IoT systems, interested in solving the problems that occur when you try to connect large volumes of low cost, ultra low power devices to the internet. In his 6 years at Arm, he has contributed to architecture and design of security and cryptographic features in Arm Cortex-M microcontrollers, as well worked on developing ARM's IoT strategy and technology including operating systems, hypervisors, and trusted system architecture. Hugo holds a B.Eng in Electronic Engineering from the University of Canterbury. **www.arm.com**