



Wireless Heritage SIG

'75 years of radar'

Friday 16th October

Hosted by RAF Air Defence Radar Museum

This SIG is championed by Stirling Essex, **Espansivo**, Steve Haseldine, **Deaf Alerter**, Andy Sutton, **EE**, Geoff Varrall, **RTT Online** and Nigel Wall, **Climate Associates**.

Venue: **RAF Air Defence Radar Museum, Nr RRH Neatishead, Horning, Norfolk, NR12 8YB**

AGENDA

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- 10:30** Registration and networking with refreshments
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- 11:00** Introduction to Wireless Heritage SIG from **Nigel Wall, Climate Associates**
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- 11:10** Welcome from event host, **Beth Condie, Curator and Manager, RAF Air Defence Radar Museum**
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- 11:15** **Session chaired by SIG Champion, Nigel Wall, Climate Associates**
'75 years of radar and electronic warfare in the UK'
Steve Roberts, VP Strategy, Airborne & Space Systems Division, **Selex ES Ltd**
The operational use of the UK's Chain Home radar system in the Battle of Britain was the first time in which radar made a significant contribution to the outcome of military operations. Within 5 years, radar technology had advanced to the point where a wide range of platforms were using radar to detect and intercept other platforms, transforming the way in which air operations were performed. At the same time, a new of activity was developed to prevent the enemy from gaining the benefits of using their radars – this was the start of Electronic Warfare in the radar frequency bands. In the Cold War period that lasted for the next 45 years, the capabilities of radar were further developed to allow control of guided weapons and to assist in the navigation and flight of manned platforms. This in turn presented new challenges for the Electronic Warfare countermeasures. Many of the recent radar and EW products would be recognisable to the pioneers in the fields, but some of the processing and technologies employed to enable the performance would not have been imaginable at the point in the 1930s when they developed Chain Home. The story of radar and electronic warfare will be illustrated by descriptions and operational stories of the equipment developed in the UK by such famous companies as Ferranti and Marconi. The heritage of these companies lives in Selex ES, which are now the UK's leading supplier of airborne radar and EW.
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- 12:45** Q&A
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- 13:00** **Lunch and networking**
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- 14:00** **Tour of museum**
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- 15:30** **Free to continue looking round museum or depart**
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With the permission of the speaker, the presentation 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 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

Profile of host

RAF Air Defence Radar Museum

The RAF Air Defence Radar Museum is based at the old RAF Neatishead site. At the museum you can enjoy an enthralling tour through the air defence story from before the Second World War to the present day, with the Cold War Ops Room being the jewel in the crown.

There are many exhibits both inside the Museum and outside and the refurbished Bloodhound Missile, always attracts attention. We are also fortunate to host the Spirit of Coltishall Rooms where you can trace the history of that famous wartime airfield and its many heroes. A Jaguar cockpit is available to experience the 'fast jet' feeling and a guide will explain its operation.

Museums such as ours need the continued support of the public. Without that support an important element of our national heritage is in danger and we owe it to the coming generations to cherish and preserve our history. The air defence of the United Kingdom is the No 1 priority of the Royal Air Force and the young men and women of today's Service continue to give devoted service in the air and on the ground. The RAF Air Defence Radar Museum tells an open ended story tracing the beginnings of the RAF's responsibility for air defence, through the War years and on into the future.

Profile of SIG Champions

Stirling Essex, Espansivo

Stirling Essex has over 25 years of product development, product management, strategic marketing and business development experience in many areas of wireless technology, and has been intimately involved in the development of test systems for GSM, CDMA (IS-95), 3G (W-CDMA) and LTE. He founded Espansivo, a technology consultancy specialising in helping organisations with their technology, product and business decisions, in 2005. Stirling was previously a co-champion of the Cambridge Wireless Future Wide Area Wireless Special Interest Group and has been a member of the Cambridge Wireless Board since 2004. For more information please visit: www.espansivo.com

Steve Haseldine, Deaf Alerter

Steve Haseldine FIMC FRSA is the Chairman of three companies, Deaf Alerter plc, Electronic Communications Ltd and Evets Communications Ltd. Businesses that design and manufacture in-building, radio-based, emergency communication systems; software defined radio solutions and operate PMR, FM Broadcast and Cellular transmission sites.

His connection with radio started over 50 years ago as a schoolboy, when he became a licensed radio amateur, an interest which has influenced much of his professional career. Sponsored as a Computer Science student focussed on software development with Rolls Royce, he subsequently worked for GEC Telecommunications before becoming a Management Consultant with Price Waterhouse. Starting his own software house and radio communication businesses in 1979 he has found it rewarding that his two passions of software and radio have evolved into an almost common technology. He has seen his own companies being judged the Midlands Best Small Business of 2013 and the leading Company for Innovation in both 2012 and 2013.

As well as remaining an active radio amateur, Steve has now amassed one of the largest personal collections of communication radio equipment in the UK, with over 3000 receivers, transmitters and ancillary equipment, the vast majority of which are fully operational. The collection spans from the early spark transmitters to the latest Software Defined Radios. For more information please visit: www.deaf-alerter.com

Andy Sutton, EE and University of Salford

Professor Andy Sutton is EE's Principal Network Architect with responsibilities for RAN architecture evolution and mobile backhaul strategy and architecture. He has over 25 years of experience within the telecommunications industry, mainly in radio access, transmission and transport network strategy, architecture and design. Andy worked for Mercury Communications Ltd on fixed network transmission, switching and synchronisation before joining the cellular industry in 1993. During the last 20 years Andy has worked for Orange, France Telecom Group, H3G and EE. Andy is a Visiting Professor with the department of Computing, Science and Engineering at the University of Salford. He is a Chartered Engineer, Fellow of the Institution of Engineering and Technology, Fellow of the British Computer Society, Member of the Institute of Telecommunications Professionals and Member of the Telecommunications Heritage Group. Andy has a deep interest in all aspects of telecommunications history and heritage with a particular focus on cellular systems. For more information please visit: www.ee.com

Geoff Varrall, RTT Online

Geoff Varrall is a founder Director of RTT Programmes, a company specializing in providing technology and engineering consultancy to the wireless industry. A co-author of four books on telecommunications, Geoff has recently completed a series of studies for the GSM Association on the RF Cost economics of handsets and is widely respected for his ability to combine a broad understanding of industry technical issues with economic and business analysis. RTT has been running training workshops and strategic seminars and conferences in Europe for over 20 years. Part of his involvement with Cambridge Wireless is to help facilitate the development of new member services including workshops and conferences that can provide the basis for information exchange and business development opportunities for Cambridge Wireless members. He is presently working on developing a Wireless Heritage Special Interest Group. The role of the Wireless Heritage Group is to provide a forum in which the very substantial historic role of Cambridge in the wireless industry over the past 70 years can be promoted internationally. For more information please visit: www.rttonline.com and www.makingtelecomswork.com

Nigel Wall, Climate Associates

Nigel Wall has been an independent consultant since 2001, with a focus on Intelligent Transport Systems – "connected cars". Prior to this he held a number of key roles within BT, including leading mobile data research. He provides advice to a variety public and private sector clients, and has been involved directly in several collaborative R&D projects, worked on communications standards, is the Chair of the ITS UK Communications SIG and acts as a Technology Translator for the ICT Knowledge Transfer Network. For more information please visit: www.climate-associates.com

Profile of speakers

Steve Roberts, Selex ES

As Vice President Strategy, Steve's main responsibility is to ensure that the business develops products and services that provide customers and end-users with the solutions that they need. After 35 years in the EW Business, Steve is now responsible for the Strategy of the wider business including EW, radars, electro-optics, mission systems and tactical UAV.

Steve joined the EW Business of Marconi Space and Defence in 1976 before going to University, and became a full-time employee after graduating from Cambridge University in 1979.

Steve's main speciality for the first part of his career was computer simulations of EW systems and the threats they face. He wrote and specified Operational Software for the Skyshadow ECM Pod used on Tornado aircraft in the Gulf War of 1990 and for the Zeus integrated defensive aids system used on the UK's Harrier aircraft in a number of operations. He was Project Manager for a number of Pre-Flight Message Generators for EW Systems and was the leader of the EW Systems Engineering Discipline within BAE Systems.

From 1984 to 2000, Steve spent a lot of time supporting trials of EW equipment against various radars and threat systems. Through this time, he was responsible for deploying EW equipment to a number of conflicts, including the Towed Radar Decoy system used on RAF Tornado F3 aircraft.

Steve was the Industry Chairman of the UK's EW Tower of Excellence. This was formed by the UK's leading EW suppliers and the MoD in 2004 to co-ordinate R&D across the UK.

Steve was an external examiner on the Military Electronic Systems Engineering course run by the Royal Military College of Science (RMCS) for 4 years. Cranfield University took over the academic teaching of this and other courses for the Defence Academy of the UK. Steve has lectured on various courses run by Cranfield University since then and was appointed Visiting Professor in EW Systems in March 2011.

For more information please visit: www.selex-es.com