



Glasgow Scotland UK

www.5GSummit.org

Monday 14 May 2018

Technology Innovation Centre, University of Strathclyde, Glasgow, G1 1RD, Scotland UK



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Welcome

Welcome from the General Chair

James Irvine, University of Strathclyde

Welcome to Glasgow and the first IEEE 5G Summit to be held in the UK! These summits focus on industry, who are taking the innovation coming from universities and transforming them into products and services which change people's lives. Appropriately for Scotland, the theme of this summit is delivering 5G for rural areas. While much of the talk behind 5G is multi-gigabit services to cities, we must not forget the challenges of delivering in an environment where in one utility region – south west Scotland – 60% lack even the low wireless data rates necessary to support smart meters. I'd like to thank TPC Chair Professor Bob Stewart for organising a fantastic technical program, IEEE VTS for making this event possible, and you for attending and providing questions in the panel. Have fun!

Welcome from the Technical Programme Chair

Bob Stewart, University of Strathclyde

Welcome to University of Strathclyde and our Technology and Innovation Centre. 5G is many things to different people and groups, ranging from those who see it as 5G New Radio standards, to 5G Cores implementation, to a technology that brings new 5G applications, or it's just the G after 4G that will be faster, wider coverage and lower latency! Recognising these various aspirations we have structured a programme that brings together industry, government, academia and aspiring users for the new technology, and provide platform to share views, ideas and stimulate debate. We are pleased to have a plenary session with contributions from a number of Tier 1 mobile/wireless industry players

who will present their insights and visions for 5G, alongside presentations from UK Government offices on 5G programmes and the role of spectrum. Our parallel tracks in the afternoon focus on two areas, 5G IoT, and 5G Rural, and we are also pleased to be running a University PhD research poster session with contributions from students working in next generation communications – the posters will be presented alongside the exhibition featuring popup stands and demonstrations from almost 20 companies.

Welcome from the IEEE VTS

Oliver Holland, UKRI Chapter Chair, Kings College London

On behalf of the IEEE Vehicular Technology Society (VTS), I'd like to welcome you to the Glasgow IEEE 5G Summit, the first held in the UK. VTS is a proud supporter of the IEEE 5G Initiative. We've come a long way since mobile radio meant car phones, now encompassing a range of applications of varying levels of mobility and branching out into high-reliability, low-latency, and high-availability dimensions through 5G, as well as massive numbers of connections and step-change capacity increases.

We are here in the same venue as IEEE VTC2015-Spring, the 81st VTC since the first one was held by VTS in 1949. The next VTC which will be held in Porto, Portugal next month, and will feature an Initiative workshop focussing on 5G testbeds. We hope you can join us in Porto, or at the VTC2018-Fall conference in Chicago at the end of August—the deadline for recent results papers for this conference is open until Thursday this week. Please see the following websites for more information: <http://www.vtc2018spring.org>; <http://www.vtc2018fall.org>.

Committee



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General Chair
University of Strathclyde



Bob Stewart
Technical Co-Chair
University of Strathclyde



Stephen Speirs
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Director of 5GIC



Ashutosh Dutta
IEEE 5G Initiative
IEEE ComSoc



Ivan Marjanovic
5G Rural Track
Scottish Futures Trust



Greig Paul
Exhibits Coordinator
University of Strathclyde

Programme

Plenary Track: 9.40am to 12.45pm - 5G Innovations *(Chair – Bob Stewart, Strathclyde)*

9.00am Registration Opens & Exhibits

9.40am **Welcome to University of Strathclyde**
Sir Jim McDonald, Principal, University of Strathclyde



9.50am **Welcome from the IEEE Vehicular Technology Society**
IEEE VTS UKRI Chapter Chair, Oliver Holland, Kings College, London



9.55am **Glasgow 5G Summit Overview: Plenary, IoT and Rural Tracks**
IEEE 5G Summit Chair, James Irvine, University of Strathclyde



10.00am **5G Connectivity – Embracing the New Business Opportunities**
Tony Gribben, Head of Cisco (Scotland) & Dez O'Connor, Bus Dev. Manager



10.15am **5G New Radio (NR) Standards – What are the Technologies?**
Iain Stirling, Principal Communications Engineer, MathWorks Ltd



10.30am **New Technologies, New Applications and 5G Future**
Rahim Tafazolli, Director, 5G Innovation Centre (5GIC), University of Surrey



10.45am **Slicing the 5G Businesses Case**
Mansoor Hanif, 5GUK Advisory Board Member



11.00am **UK DCMS: 5G Trials and Testbed**
Andrew Smith, 5G Testbed & Trails Policy Advisor, DCMS (UK Government)



11.15am **Break and Exhibits / Networking**

11.40am **Enabling 5G in the UK- the role of spectrum**
Cristina Data, Director of Spectrum Policy and Analysis, Ofcom



11.55pm **5G – Maximising use of Licensed, Unlicensed & Shared Spectrum**
Dean Brenner, Senior Vice President, Qualcomm Inc



12.10pm **Panel Session: What are the Barriers to Deployment?** Moderator: Ian Birleson, WHP

12.45pm **Lunch sponsored by WHP Telecoms**
Networking and Exhibit/Displays/Demonstrations



Exhibits

1 Parallel Wireless

Reimagining your Network

2 WHP Telecoms

the UK's longest established provider of professional and network support services to the wireless telecommunications sector

3 CloudNet Solutions

Networks and services in hard to reach areas

4 FarrPoint Ltd

Advice and support on planning, procuring and implementing IT technology solutions

5 5GRuralfirst Consortium

UK Govt DCMS 5GRuralFirst Project

6 Centre for White Space Communications

Dynamic Spectrum Access MATLAB Software Defined Radio Demo

7 Mawingu Networks

Building Affordable and Reliable Next Generation Community Networks in Emerging Economies

8 MathWorks Ltd

DSP and Communications Software for 5G and SDR

9 Power Networks Demonstration Centre

10 Commhoist Group

Integrated Services for Telecommunications

11 Onscale Ltd

Next-generation Cloud HPC for CAE

12 pureLiFi Ltd

LiFi for 5G

13 Scottish Wireless

Wireless Systems Design and Consulting

14 Keysight Ltd

Test and Measurement for Mobile/Wireless

15 Lime Microsystems Ltd

LimeNet: Software Defined Cellular Radio supporting OPEN RAN

16 Scottish Centre for Satellite Applications (SoXSA)

Bringing Space Down to Earth

17 Broadway Partners Ltd

Connecting the Unconnected and Future of Broadband

18 5G Innovation Centre (5GIC), University of Surrey

5G Demonstrations and Applications









19 Censis

Innovation Centre for Sensor and Imaging Systems

Track 1: 5G for IoT & Utilities, 2pm – 5pm (Chair – James Irvine, Strathclyde PNDC)

2.00pm	Operator Perspectives on 5G Mike Fitch, Chief Wireless Research, British Telecom	
2.10pm	NB-IoT Service Provision for Utility Sector Andy Haig, Vodafone	
2.20pm	The Global IoT Service Provision Opportunity Charlie Swan, Nokia	
2.30pm	5G Equipment Challenges Wenbing Yao, Huawei	
2.40pm	Spectrum Management and Coverage Raj Sivalingam, Julian Stafford, WHP Telecoms	
2.50pm	IoT and Connectivity Monitoring Requirements for Health and Wellbeing Andy Todman, Chief Executive, Age UK West Cumbria	
3.00pm	5G Security and Trust for IoT in Mission Critical Systems Greig Paul, University of Strathclyde	
3.10pm	How might 5G and IoT contribute to Scotland's Connectivity Vision? Richard Parkinson, Neil Watt, Farrpoint Ltd	
3.30pm	Break and Exhibits / Networking	
4.00pm	Chaired Discussion Session on 5G IoT and Utility Sector: Moderator: James Irvine, Strathclyde	

Track 2: 5G Rural, 2pm – 5pm (Chair – Stephen Speirs, Cisco Systems)

2.00pm	5GRuralFirst Project: Shared and Dynamic Spectrum for Rural Connectivity David Crawford, Centre for White Space Communication	
2.10pm	5G for Agricultural Technologies: Drones, V2X, 4k Video and IoT Dave Ross, Agri-Epi Centre	
2.20pm	Next Generation Media Broadcast for Radio & TV Rural Broadcast David Hemingway, Senior Policy Advisor, BBC R&D	
2.30pm	Remote Rural – Don't leave us to last again!! Donnie Morrison, MBE, Highlands and Islands Enterprise	
2.40pm	The Real-5G vision for Rural & Remote areas Zahid Ghadialy, Parallel Wireless Ltd	
2.50pm	Self-organised networks for coverage in Events, Disaster Areas & Rural Areas Muhammad Imran, University of Glasgow	
3.00pm	LiFi for 5G and Beyond Harald Haas, pureLiFi Ltd	
3.10pm	5G Rural Integrated Testbed Michael Armitage, Broadway Partners Ltd	
3.30pm	Break and Exhibits / Networking	
4.00pm	Chaired Discussion Session on 5G Rural Opportunities: Moderator: Ivan Andonovic, Strathclyde	
4.45pm	5G Summit Key Takeaways and Close: Moderator and Chair: Bob Stewart, Strathclyde	

Social Networking

5.00-6.00pm	Reception in TIC
7.00pm	Optional Networking Dinner in Glasgow (Tickets can be ordered online)