

Quantum Communications Hub

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National Network of Quantum Technologies Hubs

The four Hubs:

Quantum Technology Hub in Sensors and Metrology:

Birmingham-led; focus on atoms



Quantum Enhanced Imaging (QuantIC):

Glasgow-led; focus on light



NQIT Networked Quantum Information Technologies:

Oxford-led; focus on ion traps and photonics



Quantum Communications Hub:

York-led; focus on QKD applications



quantumcommshub.net

Quantum Communications Hub

£24M funding (capital and recurrent) + £2M additional capital.

Our vision is to develop new technologies that will reach new markets, enabling widespread use and adoption in many scenarios – from government and commercial transactions through to consumers and the home.

Through our technology demonstrators we will welcome trial or pilot tests, as part of our user engagement programme.

Quantum Communications Hub: Partners

Academic partners:

York (lead), Bristol, Cambridge, Heriot-Watt, Leeds, Royal Holloway, Sheffield, Strathclyde

Industrial partners:

R&D: Toshiba Research Europe Ltd. (TREL), BT, the National Physical Laboratory (NPL)

Network: ADVA, ID Quantique, NDFIS/NDFE

Collaboration/Consultancy/Supplier (optical): Oclaro, ID Quantique

Collaboration/Consultancy: ArQit, Fraunhofer UK, Cognizant, Nu Quantum, WideBlue, Cryptalabs, Airbus, L3-TRL

Start-ups (exploitation): Qumet, KETS (Bristol), Cryptographiq (Leeds/IP Group)

Standards/Consultancy: ETSI, GCHQ (NCSC), NPL

User engagement: Bristol City Council, Knowle West Media Centre, Cambridge Science Park, Cambridge Network Ltd, BT Adastral Park

Partnership Resource:

Cambridge Quantum Computing, Craft Prospect, Glasgow/QuantIC, Oxford/NQIT, National STEM Learning Centre, RAL Space, University of Edinburgh, York Science Education Group

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Quantum Key Distribution (QKD)

Secure sharing of a key between two parties (Alice and Bob!)

The quantum part is the distribution of the key, with a promise from quantum physics that only Alice and Bob have copies.

Once distributed, the (non-quantum) uses of the key(s) cover a wide range of secure information tasks: communication or data encryption, financial transactions, entry, passwords, ID/passports...

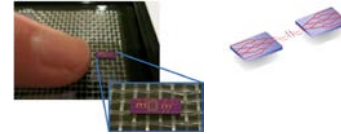
The keys are consumables (use once only for security), so need regular replenishment, which is “quantum”.

Quantum Communications Deliverables

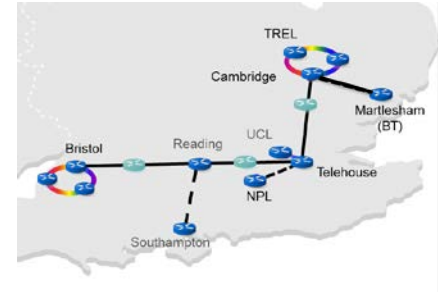
Handheld Alice (credit-card size or 'phone compatible) for consumer applications



Chip-based Alice and then Bob modules



Establishment, operation and user-engagement of the UK Quantum Network



“Next-generation” (beyond QKD) technologies demonstrated on the UKQN

Further Quantum Information

The Quantum Communications Hub:

www.quantumcommshub.net/

The UK National Quantum Technologies Programme:

<http://uknqt.epsrc.ac.uk/>

Quantum Technologies: Blackett Review

<https://www.gov.uk/government/publications/quantum-technologies-blackett-review>

QT Showcase: QEII Centre London, Friday 15 November 2019

<https://qtshowcase2019.eventbrite.co.uk>