



## Testing begins on UK's ultra-secure Quantum Network Link (UKQNet) between research and industry

Government and industry collaborate to open the world's first commercial-grade quantum test network link between the BT Labs in Suffolk and Cambridge University.

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New high-speed link to boost the development of new quantum technologies

Today the UK celebrated a milestone in the development of ultra-secure quantum networks with the opening of the world's first commercial-grade quantum test network link between the BT Labs in Suffolk and the Cambridge node of the UK's new Quantum Network.

The advent of quantum computing will offer huge increases in computing power and capabilities, but in the wrong hands it could also be used to render many of our security encryption measures obsolete. In order to both provide and secure future communications, government and industry are working collaboratively on a range of new technologies, including Quantum Key Distribution (QKD).

The new high-speed link will enable testing and demonstration of new quantum technologies. This will include trials of how these technologies can be used to secure critical and sensitive data across vertical industry sectors such as healthcare, banking, defence and logistics.

The link forms part of the UK Quantum Network (UKQN) being built by the Quantum Communications Hub, a collaboration between research and industry, supported by the UK's



National Quantum Technologies Programme. The new connection stretches from BT's Adastral Park research campus near Ipswich in the East of England, to Cambridge. The wider UKQN network then extends onward over the National Dark Fibre Infrastructure Service to Bristol in the South-West.

The quantum-secured link directly connects not only the research facilities of the BT Labs and the University of Cambridge, but also the high-tech industry clusters at each end: the Cambridge Science Park and Innovation Martlesham near Ipswich. This opens the door to a huge range of trial projects focused on quantum secure network technologies and services with potential for exploitation by industry.

The link uses over 125km of standard BT optical fibre between Cambridge and Adastral Park, with BT Exchanges acting as 'trusted nodes' along the route. The link will carry both quantum and non-quantum traffic; the QKD technique shares data encryption keys via an ultra-secure quantum channel over the same fibre that carries the encrypted data itself.

The network was built by the core partners of the Quantum Communications Hub – BT, and the universities of Cambridge and York. Support for the development was provided by ID Quantique and ADVA, who supplied the QKD systems and optical transmission equipment, and the system-specific expertise required to integrate it.

Intended to stimulate and support the commercial exploitation of quantum research by UK industry, UKQNTel is a clear embodiment of the collaboration between research and industry that is central to the UK's National Quantum Technologies Programme. The link is co-funded through the Quantum Communications Hub by the Engineering and Physical Sciences Research Council and BT, and built by academic and research partners.

Chris Skidmore, Minister of State for Universities, Science, Research and Innovation, said: "The first ever commercial grade, quantum network link between Suffolk and Cambridge is an important step in protecting the UK from cyber threats. The success of our modern Industrial Strategy depends on us maintaining the UK as a hotbed of innovation. We have identified AI and Data as a Grand Challenge to ensure we build on our world-leading reputation in harnessing new technologies, which we will achieve in quantum technology through continued collaboration between industry, government and the National Quantum Technologies Programme."

Tim Whitley, MD of Research for BT, said: "The BT Labs at Adastral Park have played a central role in the development of the fibre optic networks that we now take for granted as the backbone of global communications. We're proud to be at the forefront of the next generation of network design, helping the UK take the lead in the development of ultra-secure quantum networks, and keeping our customers' data safe in years to come."

Tim Spiller, Director, Quantum Communications Hub, said: "This new network represents a major step forward for the UK National Quantum Technologies Programme, providing a direct link between research and industry, and an opportunity to develop new applications and services."



#### Notes for editors:

About the UK Quantum Communications Hub: The Quantum Communications Hub is a technology research and development consortium of UK Universities, private sector companies and public sector stakeholders, funded by the UK National Quantum Technologies Programme. The overall vision of the partnership is to develop quantum secure communications technologies for new markets, enabling widespread use and adoption – from government and commerce through to consumers and the home. For more information, visit <https://www.quantumcommshub.net>.

About the UK National Quantum Technologies Programme: The UK National Quantum Technologies Programme is a major national initiative, which aims to ensure the successful transition of quantum technologies from laboratory to industries. The vision is to create a coherent government, industry and academic quantum technology community that gives the UK a world-leading position in the emerging multi-billion-pound new quantum technology markets, and to substantially enhance the value of some of the biggest UK-based industries. For more information, visit <http://uknqt.epsrc.ac.uk/>.

About the Engineering and Physical Sciences Research Council (EPSRC): The Engineering and Physical Sciences Research Council (EPSRC) is part of UK Research and Innovation, a non-departmental public body funded by a grant-in-aid from the UK government. EPSRC is the main funding body for engineering and physical sciences research in the UK. By investing in research and postgraduate training, they are building the knowledge and skills base needed to address the scientific and technological challenges facing the nation. Their portfolio covers a vast range of fields from healthcare technologies to structural engineering, manufacturing to mathematics, advanced materials to chemistry. The research they fund has impact across all sectors. It provides a platform for future UK prosperity by contributing to a healthy, connected, resilient, productive nation. For more information, visit <https://epsrc.ukri.org/>.

About ID Quantique (IDQ): Founded in 2001 as a spin-off of the Group of Applied Physics of the University of Geneva, IDQ is the world leader in quantum-safe crypto solutions, designed to protect mission critical data. The company provides quantum-safe network encryption, secure quantum key generation and Quantum Key Distribution solutions and services to the financial industry, enterprises and government organisations globally. IDQ's quantum random number generator has been validated according to global standards and independent agencies and is the reference in highly regulated and mission critical industries – such as security, encryption, critical infrastructure and IoT – where trust is paramount. Additionally, IDQ is a leading provider of optical instrumentation products, most notably photon counters and related electronics. The company's innovative photonic solutions are used in both commercial and research applications. IDQ's products are used by government, enterprise and academic customers in more than 60 countries and on every continent. IDQ is proud of its independence and neutrality, and believes in establishing long-term and trusted relationships with its customers and partners. For more information, visit [www.idquantique.com](http://www.idquantique.com).

About ADVA: ADVA is a company founded on innovation and focused on helping our customers succeed. Our technology forms the building blocks of a shared digital future and empowers networks across the globe. We're continually developing breakthrough hardware and software that leads the networking industry and creates new business opportunities. It's these open connectivity



solutions that enable our customers to deliver the cloud and mobile services that are vital to today's society and for imagining new tomorrows. Together, we're building a truly connected and sustainable future. For more information on how we can help you, please visit us at: [www.advaoptical.com](http://www.advaoptical.com)

About Innovation Martlesham: Innovation Martlesham is an established ecosystem of over 120 high-tech ICT companies located at Adastral Park. Besides being home to a diverse range of large, medium and small companies, Innovation Martlesham is a 'collaborative ecosystem' for technology companies. It provides physical office accommodation and a Business club to support the demand from businesses and hosts networking opportunities and events, has a Business Support Function and a Mentor Group and an ICT Business Incubator and Accelerator. For more information, visit [www.innovationmartlesham.com](http://www.innovationmartlesham.com).