# £4.9 Million UKRI grant to fund UK Dark Fibre Research Facility for Future Internet Research

*Press release issued: 1 March 2019*

National Dark Fibre Facility will enable researchers to create the communications technologies to power the future internet.

The University of Bristol's Smart Internet Lab along with a consortium of Universities have been awarded a £4.9 million grant from UK Research and Innovation (UKRI)- Engineering and Physical Sciences Research Council (EPSRC) to fund a National Research Facility, the National Dark Fibre Facility (NDFF).  The UKRI facility will support UK academic and industrial research on new communications networks technologies for the future internet.



*5GUK Exchange in the Smart Internet Lab*

Following a competitive call for proposals, the 5 year contract for NDFF has been awarded to four partners. Alongside the University of Bristol are the Universities of Cambridge and Southampton and UCL will be leading the project as prime contractor.

NDFF Technical Director, Professor Dimitra Simeonidou from the University of Bristol said:

"The National Dark Fibre Facility will be a fundamental asset for driving Future Networks Research, maintaining the UK's leadership in the field. NDFF is designed to carry a large number of parallel independent experiments, at the same time, and will facilitate inter- connectivity of academic and industrial facilities beyond the Dark Fibre footprint, through Jisc L2 services with a national reach.

NDFF will enable University researchers and UK Industry to carry out collaborative research at scale to address future digital infrastructure challenges such as connectivity, IoT, data, cyber and quantum security, resilience, automation etc."

The NDFF will provide access to a dedicated software defined Dark Fibre Network using dedicated dual optical fibre connections between these universities, with onward connection to European and Worldwide research networks via Telehouse, London. These fibre links, comprising some 750 km of single mode fibre, together with control and monitoring systems, will be provided to NDFF through continued close collaboration with the Jisc-Joint Academic Network, Janet.

Researchers in the UK will be able to access the new network, to be named **Aurora 3**, both directly by placing equipment at consortium sites and remotely using Layer 2 networking connections, such as the Jisc Netpath service.

The new service builds on previous work carried out by the consortium, which led to the creation of the EPSRC and Jisc funded National Dark Fibre Infrastructure Service (NDFIS). NDFIS was the world's first optical fibre research network to offer software defined transmission parameters, dynamic

reconfiguration into multiple sub-networks with the ability to handle multiple transmission formats simultaneously.

As well as supporting research on the future core optical network, which underpins the internet, NDFF will also enable research with experimental metro and access networks, including a new small mesh network in the Cambridge area and interworking with Layer 2 through dark fibre connections to the first software defined network Exchange (SDNx) at Slough Virtus Data Centre.

NDFF will also support research on quantum communications in collaboration with the UK Quantum Technology Hub for Quantum Communications and on wireless backhaul networks for future Wireless Systems such as 5G+ and the internet of things.

NDFF Director, Professor Alwyn Seeds from UCL Electronic and Electrical Engineering said:

"We are delighted that UKRI-EPSRC have supported the creation of the new National Dark Fibre Facility. This will enable UK researchers to remain at the forefront of technology research for the future internet.

UK Photonics and UK electronics are large industries with annual revenues of £10 billion and £29 billion respectively. We will be working with leading UK companies to transfer technologies developed with the aid of NDFF into new products and services. The benefits to the UK economy will be correspondingly large."

Further information
**About Bristol University's Smart Internet Lab**

The Smart Internet Lab is a unique interdisciplinary research hub, combining more than 200 digital experts from around the world. We aim to address key limitations of our current internet system, improving scalability, lowering latency and increasing bandwidth.

We provide a holistic approach to hardware and software co-design, solving critical problems in the global internet evolution. We are one of the few universities offering expertise and combined thinking across the fields of optics, networks and wireless technologies. This enables us to bring together end-to-end, wired-wireless network design and optimisation. We fuse expertise and innovation across Smart cities, AI, autonomous vehicles, Internet of Things (IoT) and eHealth.

We aim to address grand societal and industrial challenges, and to meet continuing cultural demand for improved technological infrastructure and performance.

**Engineering and Physical Sciences Research Council (EPSRC)**

EPSRCis 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, we are building the knowledge and skills base needed to address the scientific and technological challenges facing the nation.

Our portfolio covers a vast range of fields from healthcare technologies to structural engineering, manufacturing to mathematics, advanced materials to chemistry. The research we fund has impact

across all sectors. It provides a platform for future UK prosperity by contributing to a healthy, connected, resilient, productive nation.