



World leading network research
for a Smart Society

Building our hyperconnected future

Benefiting from a unique 5G & Beyond
Testbed for a Smart City, Region and Campus

High Performance Networks Research Group (HPN)

at the University of Bristol

About

The High Performance Networks (HPN) Group, which is part of the Smart Internet Lab and led by Professor Reza Nejabati, specialises in the application of advanced hardware and software network technologies for Future Internet Infrastructure.

The HPN Group is an international leader and highly influential in the fields of Future Internet Experimentation, 5G and Beyond 5G Networking, Optical Networks, Quantum Networking, Data Centre and Cloud Computing, Software and Hardware Defined Networking, and AI assisted Networking.

Over the years, the HPN Group has made significant breakthroughs in technology areas. These include:

- End-to-End Network Slicing
- Software Defined Networking
- QKD networking
- Network Function Virtualisation
- Hardware Programmable Network Functions
- End-to-End 5G Network Orchestration
- Optical-Wireless-IT Infrastructure Convergence

In addition, a field trial of emerging 5G applications and services in 5G Urban and Smart City Infrastructures.

Research areas:

- Quantum Internet
- Autonomous Networking
- Data Centre Networking
- Programmable Networks
- 5G & Beyond

Facilities

The High Performance Networks (HPN) Group has a strong experimental focus in the development of advanced technologies for future high-capacity, flexible and dynamic communication network infrastructures. The Group utilises experimental facilities of the smart Internet Lab comprising of several different feature-rich testbeds covering the physical layer all the way through to the application layer.

These facilities offer a wide variety of capabilities, including transmission speeds up to 1 Tbit/s per channel, full photonic elastic switching, Carrier Grade Ethernet, IP routers, optical and layer 2 SDN enabled (OpenFlow) switches and transponders complemented by visualisation and Cloud infrastructures.

The underlying research network connectivity facilities accommodate direct fibre links to multiple sites around Bristol, a national dark fibre network link (NDFF), 1 & 10 Gbps dedicated wavelength services over the JANET network, as well as high speed dedicated connectivity over GEANT and GLIF to many research institutions in the UK, Europe, North and South America, Japan and Asia.

Smart Internet Lab

Researchers of the HPN Research Group are members of the Smart Internet Lab. This recent initiative builds on Bristol's strategic research in communications and digital technologies to create a hub for internet research, with long-lasting benefits for society and the economy.

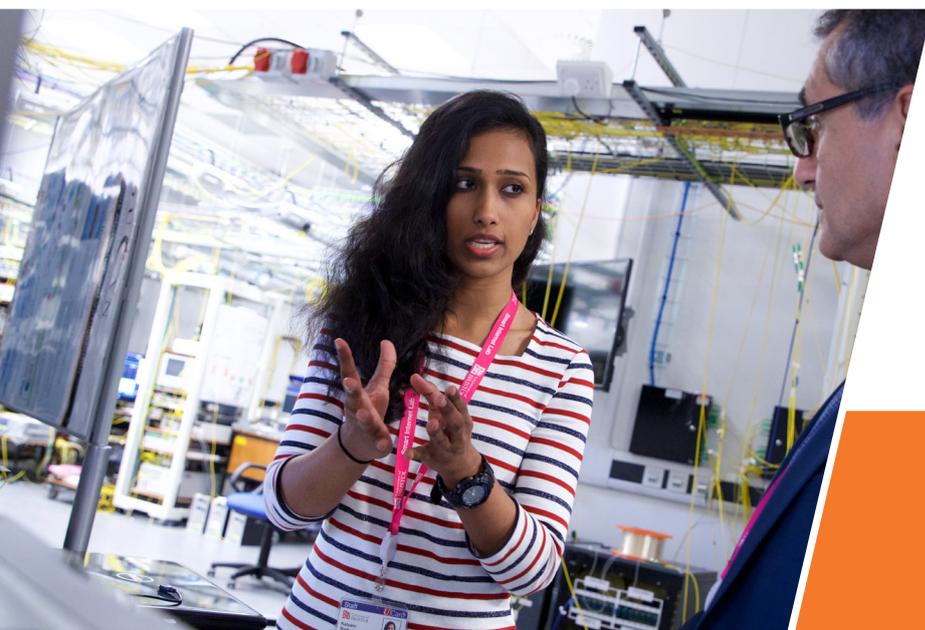
bristol.ac.uk/smart

Projects and collaborations

The HPN Group has a strong experimental focus and a large portfolio of research projects funded by the European Union, UK National Funding Agencies and industrial collaborations.

HPN is the UK's most recognised network research centre, with world leadership on open innovation and large scale experimental infrastructure including optical, 5G & Beyond and Smart City networks. Building on its exceptionally strong track record, HPN has managed to secure more than £80M of research grants over the last five years, and to collaborate with leading research institutions and industry across the UK, Europe, USA, Brazil and Japan.

More importantly, HPN has established strategic partnerships with all the major industrial vendors and service providers, (such as Nokia and BT) and local authorities, (such as Bristol City Council). These collaborations are a way to transfer technology and directly impact on regional, national and international network innovations.



Supporting the
transformation of
our digital world