



University of  
**BRISTOL**

**World leading in fibre, wireless and 5G  
convergence research**

**End-to-end network design and optimisation**

**Creating the communication networks architecture  
of the future**

# Smart Internet Lab at the University of Bristol

## About us:

The Smart Internet Lab at the University of Bristol is a hub for internet research which addresses grant societal and industrial challenges. We perform cutting edge research on optical and wireless communications and offer a unique holistic approach to hardware and software co-design, solving critical problems in the global internet evolution.

We are witnessing the emergence of a smart world, with 'smart homes', 'smart cities', 'smart stadiums', 'smart security', 'smart energy', and 'smart transport'. Our current internet however is unable to scale enough to support the demand and rapid changes in the way we consume Internet Services. To address this key limitation and support trillions of internet connected machines, we need to increase network capacity, enhance coverage reliability and flexibility, lower end-to-end latency and re-design future networks.

Our 200 experts on 5G radio/wireless, optical communications and networks research challenge the complexity of tomorrow's world by fusing research expertise and innovation in a range of research areas such as IoT, 5G and beyond, Future Transport Networks, Smart Cities, Autonomous Networks, Machine Learning and Artificial Intelligence, Network Convergence, Mobile Edge Computing, Network Softwarization. Our unique offering across optical, wireless, IoT and

cloud technologies enable us to bring together end-to-end network design and optimisation and impact regional, national and global ICT innovations.

As one of the UK's most renowned Information and Communications Technology (ICT) research centres we have an exceptionally strong track record on pioneering concepts of programmable and smart experimental city infrastructures, as well as, developing large-scale applications and service-oriented networks.

### Our Labs

Our state-of-the art Smart Internet Lab facilities are uniquely able to support research ranging from devices to applications across multiple technologies, to leverage benefits from hardware/software co-design and perform experimentation in "the wild", validating our research outputs. Our feature-rich experimental facilities offer 1. Network experimentation, 2. Wireless research, 3. Photonic fabrication and 4. Research test-beds at scale including urban, national and international.

### What is 5GUK Test Networks?

5GUK Test Networks is an exciting new 5G Hub partnership linking three leading UK universities' test beds which collectively delivered the world's first end-to-end 5G systems trials. This initiative was funded by the UK Government's Department of Digital, Culture, Media and Sport (DCMS)'5GUK

Testbeds and Trials Programme' in an effort to create a world-class 5G technology Test Network that places Britain at the forefront of the next wave of mobile technology, adding up to £173 billion to the economy by 2030.

### University of Bristol's 5GUK Test Network

The University of Bristol has deployed 5G capability in Bristol city centre focusing on the convergence of fibre infrastructure and 5G wireless access. The University of Bristol contributes to the key Software Defined Network (SDN) technologies for end-to-end 5G service delivery. Smart Internet Lab researchers have created a multi-technology testbed connected via a city wide fibre ring and several active switching nodes. **Interested in using our testbed? Please contact us.**

The only UK University with an EPSRC funded Centre for Doctoral Training in Communications.

### The Bristol Ecosystem and the New Campus

Bristol is at the heart of digital innovation, surrounded by a rich digital SME eco-system, collaborative city leadership, creative industries and engaged citizens. The result is a unique coalition between the University, local government and international and local



*End-to-End Network  
Research and  
Experimentation*