# ISCF Demonstrator Capabilities

The University of Bristol offers support for ISCF Audience of the Future Demonstrator Projects via its Bristol Vision Institute (BVI) and its Smart Internet Lab.

BVI is a world leader in vision research, spanning human and animal vision, artificial vision systems, visual information processing and the creative arts. It embraces strength across disciplines, bringing together some 160 associates. It is widely recognised for its leadership in creative technologies, earning a reputation for exploitation alongside academic excellence. BVI partners with major organisations such as BBC, Aardman, Netflix, YouTube, Sony, RAI, DW, Technicolor and Hollywood (AMPAS). The University of Bristol, in collaboration with several local partners, has established a new city-based VR laboratory - Bristol Virtual Reality Lab (BVRL) provides a hub of expertise and collaboration on all aspects of VR, AR and MR.

The Smart Internet Lab is an international leader in 5G research and experimentation and one of UK's most renowned Information and Communications Technology (ICT) research centres. With 200 experts on 5G radio/wireless, optical communications and networks research, Smart Internet Lab directly impacts on regional and national ICT innovations. We have pioneered concepts such as programmable and smart experimental city infrastructures, as well as developing large-scale applications and service-oriented networks. We have worked with digital creative industries to provide a 5G platform, enabling the demonstrations of VR & AR experiences, as showcased at our public Layered Realities Weekend.

**In the context of ISCF Demonstrators, we offer expertise in the following areas:**

- **Understanding Audiences-Measuring Immersion**: Immersive formats promise new and powerful ways to deliver performance introducing new mediation processes between artistic performance and audience appreciation. However, these interactions are not well understood and robust means of measuring individual or audience immersion are this key to any demonstrator. BVI has developed innovative non-invasive measures of immersion which have been validated with globally leading partners. These offer a way of understanding and measuring changes in immersion to inform technology-narrative interaction and editorial decision making. We also offer instrumentation for measuring collective measures of immersion and the potential to conduct large-scale trials for mass evaluation and validation.

- **Delivering Immersive Experiences**: To ensure mass exposure to high quality experiences, the immersive properties of content must be preserved when content is transmitted over bandlimited networks. The relationships between content type, acquisition format, format parameters, coding artefacts, viewing environment and visual experience therefore must be understood in order to design the most efficient representations and compression methods. Working with major international partners, BVI has pioneered the use of AI learning methods to capture the interactions and dependencies between content characteristics, bit rate and perceived quality, taking account of the attributes of human vision. These award-winning innovations offer the potential to revolutionise content delivery methods.

- **World-leading 5G network testbed**: As part of a £16 million investment by DCMS, the University's Smart Internet Lab has deployed an end-to-end 5G test network in Millennium Square, Bristol. The 5G network testbed, offers a facility to deliver 5G end-to-end trials, testing the capability of 5G to make an application or service work in a real-world environment. 5G will massively increase speed, capacity and reliability compared with 3G and 4G, offering Mobile Edge Computing (MEC), low latency and high bandwidth. Examples of application include: mobile video on demand, virtual, mixed or augmented reality, enhanced mobile gaming services and enhanced implementation of the Internet of Things.

5G Digital Innovation – The Smart Internet Lab

- **Virtual and Augmented Reality**: The Visual Information Laboratory within the BVI has expertise in the technology underpinning Augmented Reality, including 3-D tracking, visual SLAM and real-time object recognition. It also has experience of developing large scale AR applications in collaboration with industry. The University is also a founding partner of the recently opened Bristol VR Lab (BVRL - www.bristolVRlab.com), a collaboration hub for research and commercial development in VR and AR, consisting of residents and SME partners working alongside University researchers. The BVRL provides an ideal partner for impact projects in a wide range of application areas, with access to a network of developers, start-ups and the wide creative sector around the Bristol region. Other BVRL partners include UWE, Watershed, Opposable Group and the BBC.

**Please contact us to discuss how we could enable successful delivery of an innovative audience experience:**

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