

BSI (British Standards Institution) has read with interest the call to the Ofcom's consultation on 'Promoting investment and innovation in the Internet of Things'. We would like to submit views on the role of standards (and BSI) to support Ofcom and other stakeholders in facilitating the growth of the Internet of Things (IoT).

### **Background on BSI (Question 12)**

BSI is the UK's National Standards Body (NSB), incorporated by Royal Charter and responsible independently for preparing British Standards and related publications and for coordinating the input of UK experts to European and international standards committees. BSI has over 110 years of experience in serving the interest of a wide range of stakeholders including government, business and society.

BSI also presents the UK view on standards in Europe (via the European Standards Organizations CEN and CENELEC) and internationally (via ISO and IEC). BSI has a globally recognized reputation for independence, integrity and innovation ensuring standards are useful, relevant and authoritative.

BSI, as the UK's NSB, is responsible for maintaining the integrity of the national standards-making system not only for the benefit of UK industry and society but also to ensure that standards developed by UK experts meet international expectations of open consultation, stakeholder involvement and market relevance.

A BSI (as well as CEN/CENELEC, ISO/IEC) standard is a document defining best practice, established by consensus. Each standard is kept current through a process of maintenance and review whereby it is updated, revised or withdrawn as necessary.

Standards are designed to set out clear and unambiguous provisions and objectives. Although standards are voluntary and separate from legal and regulatory systems, they can be used to support or complement legislation.

Standards are developed when there is a defined market need through consultation with stakeholders and a rigorous development process. National committee members represent their communities in order to develop standards and related documents. They include representatives from a range of bodies, including government, business, consumers, academic institutions, social interests, regulators and trade unions.

### **Unique position of BSI (Question 12)**

BSI welcomes Ofcom's forward thinking approach in consulting on the Internet of Things (IoT) in particular given the new approaches that will be required in terms of the next generation of spectrum. In recent times there has been considerable attention given to the subject of IoT. With much recent consortia standards leadership being driven by large,

primarily US-based, technology firms. However, the UK is also in a strong position to benefit from the growth of IoT thanks a number of factors including a sizeable IoT start-up community and existing, much welcomed, HMG support (e.g. Innovate UK's IoT ecosystem demonstrators).

As is indicated by the debate around how IoT fits in with existing spectrum infrastructure, IoT is a cross-industry and multi-disciplinary challenge. Making the most from IoT will require new relations to be built between previously unconnected disciplines and spheres of expertise.

BSI has a portfolio of 34,000 standards developed in 1,200 technical committees/sub committees. These committees gather stakeholder groups to address the best practice challenges that different areas face. BSI is uniquely placed in the UK to bring together stakeholders from diverse topic areas to cover the various facets of IoT because of the breadth of topics covered by our committees.

In addition, there are existing standards within BSI's portfolio that serve as foundations to develop best practice to meet the new challenges of IoT (data protection, information/cyber security, cryptography, smart cities, smart meters, home automation, interoperability, sensors/sensor networks, actuators, RFID, communications equipment and many others).

### **Specific call for input – International developments (Question 10)**

BSI presents the UK voice in standards in Europe (via CEN and CENELEC) and internationally (via ISO and IEC). BSI (and the majority of BSI stakeholders) are ultimately focused toward standards that are applicable in as many countries as possible. The majority of the 34,000 standards that BSI currently has published are international in nature; this is especially the case with technology-related standards. Many of the standards from BSI that provide the building blocks for IoT are already established international standards (information security, sensors/sensor networks, actuators, RFID, communications equipment, etc.) and will be developed further to remain current.

Beyond the existing IoT-related standards, the need for a co-ordinated approach to specific new IoT standards has been recognised. For example, stakeholders from various national bodies are currently working together to develop a programme of IoT specific standards development within ISO/IEC. This programme is due for final agreement in November 2014 with the new international standards development starting immediately to further meet international standards needs around IoT.

This being said, there is a solid case for developing more nationally focused work in emerging issues (of which there are many related to IoT) to build an accepted consensus view on shorter timescales and to then use this as a base to build international standards. One such area is around IoT interoperability. In the Innovate UK funded IoT ecosystem demonstrator, the various projects worked together to develop 'hypercat' (<http://www.hypercat.io/>) to aid interoperability between the projects. As part of the next phase of funding from Innovate UK, BSI plans to take Hypercat forward through BSI's

processes on a fast track funded basis with the ultimate goal of the concept becoming the basis for an international standard.

Within these existing and new committees, BSI would welcome the involvement and ideas from Ofcom (Ofcom already has representation on 8 BSI committees) and other stakeholder groups to develop IoT standards that meet stakeholder needs. BSI envisages there will be new/evolving national and international standards work continuing in parallel depending on what is required in different areas.

### **Specific call for input – IoT definition, application and demand (Question 1)**

The current working definition of IoT within ISO/IEC is “an infrastructure of interconnected objects, people, systems and information resources together with intelligent services to allow them to process information of the physical and the virtual world and react.”

### **Specific call for input - Security, resilience and data privacy (Question 4 & 5)**

The nature of IoT (full interconnectivity, difficulty updating embedded software, collection of personal data, etc.) means that it presents potential new security and privacy issues as well as the need to reuse existing best practice in these areas.

Despite all the enthusiasm around IoT, there is surprisingly little mention of either security or privacy. For both of these areas there are technical standards that need to be developed/deployed to ensure that security and privacy are ‘built’ into new systems. However, in addition, as has been apparent over recent decades both security and privacy are sizeable ‘people’ issues that need to be considered in the round. Indeed, organisations currently building, deploying and using IoT should look to existing, established best practice around information security (e.g. ISO/IEC 27001:2013), data protection (e.g. BS 10012) and other areas to aid protecting the information of businesses and consumers.

Ofcom’s own research reports “Living Room Connected Devices - Opportunities, security challenges and privacy implications for users and industry” and “Study into the Implications of Smartphone Operating System Security” both highlight the concerns over consumers’ ability to understand and cope with keeping security and privacy intact. BSI, with its multi-stakeholder participation including consumers, is ideally placed to support this process

Overall, BSI is uniquely placed in the UK to pull together the various elements of privacy and security to develop agreed best practice to aid UK consumers and businesses with IoT.

### **Specific call for input - Ofcom’s role (Question 11) and Network-related issues (Question 3)**

BSI agrees that Ofcom should take an active role in the development of IoT. From a BSI perspective this can include being a participant in the revision of standards and the

development of new standards. Ofcom can also work with other parts of HMG to ensure a co-ordinated HMG approach given that IoT is likely to affect all parts of HMG. Ofcom can look to ensure that IoT is 'industry agnostic'. There is the existing development of 'silo' solutions in different sectors (energy, transport, etc). This could limit the potential of IoT in the future given that new IoT solutions will work across silos in ways that are not currently being considered.