BEIRG
BRITISH ENTERTAINMENT INDUSTRY RADIO GROUP

Ofcom Consultation

British Entertainment Industry Radio Group (BEIRG)

Promoting investment and innovation in the Internet of Things

Date: 1 October 2014

BEIRG Response

Executive Summary

- BEIRG recognises the need to promote investment and innovation in new technologies. However, this promotion and investment cannot come at the expense of existing sectors, including PMSE. Ofcom's priority must be to protect incumbent users and the social, cultural and economic contribution that they make to the UK.

- The PMSE sector relies on access to a sufficient quantity and quality of interference free spectrum. Over the last few years, the sector has experienced a period of unprecedented upheaval and disruption and now needs stability in order to prosper. The Internet of Things cannot be allowed to jeopardise this access or this stability.

- BEIRG absolutely rejects the idea of unlicensed devices operating, as part of the IoT, in the TV white spaces currently used by PMSE users.

- BEIRG believes that there is no need to allocate additional spectrum for use by devices operating as part of the Internet of Things. This is because there is enough spectrum within existing M2M and WiFi bands to accommodate the IoT. Also, predictions of huge increases in mobile data demands generated by the IoT are, in BEIRG's view, unreliable.

- BEIRG asks Ofcom, before embarking on any process of allocation of spectrum for use by devices operating as part of the IoT, to undertake an independent analysis of the likely mobile data demand from such devices.

The importance of the PMSE sector

The economic and social importance of PMSE, and the creative industries which rely on it, is growing. In the UK the creative industries are currently responsible for 1.5 million jobs, and contribute nearly £72 billion annually to the UK economy. PMSE services contribute significantly to the economic, cultural and social wellbeing of the UK. For example, London theatres, which use PMSE equipment to produce much of their content, attract visitors from all over Britain and tourists from across the world. The current annual turnover of London theatres is £618.5 million, which represents just over 22 million attendances annually[1]. Including downstream revenue such as merchandise, the estimated economic impact is £1.5 billion. Similar figures apply to theatres outside London. Similarly, music festivals and live music concerts also contribute a significant amount to the British economy. Yet all of this success, both economically and culturally, would be placed in jeopardy if PMSE users' access to interference free spectrum was put at risk by devices comprising the "Internet of Things" (IoT).

Without sufficient access to interference free spectrum, the PMSE sector's ability to produce content for consumers will be severely hindered. It is essential to recognise that any impingement on PMSE usage poses a serious threat to the revenue generation of this sector. Industry users will be directly affected and face a huge potential loss of earnings and consumer reputation. In any professional production **uninterrupted** high quality audio is absolutely critical. Consequently, any interference experienced that impacts audio quality or causes a wireless audio failure has severe repercussions for both the production and the audience alike. Therefore, new services need to recognise, respect and co-exist with PMSE users, as well as to make the most of the spectrum that they have, to ensure fair usage for all.

Unlike other technologies, wireless microphones do not have the capability to move to platforms other than radio spectrum. Whereas current terrestrial television services may potentially be able to be broadcast online in the longer-term, PMSE equipment cannot function on any platform other than clean, interference-free spectrum. Currently there is only a limited pool of PMSE equipment that operates outside the UHF spectrum; the UHF bands offer the largest quantity of contiguous, good quality spectrum required for large professional events. This is not the case for other "usable" blocks of spectrum like 1.8GHz, 2.4GHz, or even 5GHz, for which some manufacturers make a small amount of equipment. Furthermore, interference from TV in the UHF bands is predictable and can be accounted for, while in other parts of spectrum where radio mics can operate, PMSE users must share spectrum with license exempt devices and find that access can be unreliable and of a poorer quality.

While BEIRG recognises that the IoT may bring benefits to society in the future, this should not be at cost to other industries reliant on spectrum, such as PMSE. The impact on these industries will outweigh those benefits to citizens and consumers. Demand for PMSE spectrum in the UK is extremely high, and growing. Upwards of 90,000 requests for PMSE spectrum access are made to the licensing band manager in the UK each year. Any changes to spectrum allocation which will adversely affect the ability of these industries to operate

[1] SOLT, *London Theatre Report*, pg.8, http://www.solt.co.uk/downloads/pdfs/pressroom/London%20Theatre%20Report%202014.pdf (accessed on 15th August 2014)

risk diminishing their contribution to society, and reduce their capability to provide a range of benefits to consumers.

Protecting incumbent users of spectrum

Over the last decade, the PMSE industry in the UK has faced serious upheaval. The clearance of the 600 MHz (Channels 31-37, 550-606 MHz) and 800MHz bands has placed a serious financial burden on the industry. The threat of interference from unlicensed White Space Devices and the proposed clearance of the 700MHz band are providing further concern for PMSE professionals and undermining investor confidence. At the same time, consumer demand for PMSE produced content is rising. BEIRG believes there will soon be insufficient clean spectrum available to operate necessary quantities of PMSE equipment for large-scale productions to be staged at prime venues across the UK.

It is in this context that BEIRG responds to this consultation on Promoting investment and innovation in the Internet of Things (IoT).

By the nature of our sector, which depends on technology and innovation, PMSE users applaud any efforts to enhance our daily lives by the use of technology such as the Internet of Things. Indeed, BEIRG supports the notion that the UK, and Ofcom as a regulator, should be at the very forefront of the development of the IoT. However, this development must only take place in a context in which existing technologies, industries and users of spectrum are protected. Recent developments, such as the proliferation of mobile data, appear to have come at the expense of existing users of spectrum. It is crucial that investment and innovation in the IoT is done whilst maintaining and prioritising the protection of incumbent spectrum users, such as PMSE.

The danger of interference from devices operating as part of the Internet of Things

BEIRG absolutely rejects the idea of unlicensed devices operating, as part of the IoT, in the TV white spaces currently used by PMSE users.

BEIRG believes that the deployment of unlicensed devices operating as part of the IoT into UHF spectrum has the potential to severely compromise PMSE's operating environment. Interference free spectrum is crucial to the successful operation of PMSE equipment. By allowing the deployment of White Space Devices, operating as part of the IoT, into UHF spectrum, Ofcom will effectively be permitting an environment to develop that allows increasing levels of interference to affect existing users of UHF spectrum far more frequently.

Allocation of spectrum for devices operating as part of the Internet of Things

BEIRG believes that there is no need to allocate additional spectrum for use by devices operating as part of the Internet of Things. This is because there is enough spectrum within existing M2M and WiFi bands to accommodate the IoT. Also, predictions of huge increases in mobile data demands generated by the IoT are, in BEIRG's view, unreliable. Indeed this is acknowledged by Ofcom in the consultation document.

First, developers of M2M devices for the IoT should be required to make optimum use of those bands already available to these applications. Second, if additional spectrum is needed for the IoT, devices should operate in existing Wi-FI bands such as the 2.4 GHz and 5 GHz bands. It should be noted that the majority of devices connected to the IoT will be transmitting small amounts of data, infrequently and hence there should be enough capacity within the WiFi and M2M bands to accommodate the IoT. And of course any dedicated bands for M2M or IoT devices will invariably provide a better quality of service than any shared bands; especially if they are licensed or at least managed.

BEIRG asks Ofcom, before embarking on any process of allocation of spectrum for use by devices operating as part of the IoT, to undertake an independent analysis of the likely mobile data demand from such devices. The website CBROnline recently reported that research from Goldman Sachs has suggested that WiFi will become the dominant wireless access technology for the Internet of Things (IoT). Goldman Sachs reported that 70% of respondents to a survey by VDC Research stated that WiFI would be the dominant technology[2]. CBROnline also reported, in May, comments from Neul that 4G technologies such as LTE will struggle to play a meaningful role in the IoT[3]. These assessments reveal the vast uncertainty surrounding predictions of future uses of technology such as mobile broadband.

The Goldman Sachs report states that:

> "IoT will require primarily wireless communications; thus, we expect Wi-Fi to be the key communications standard for IoT, much like DSL/Ethernet was for the fixed Internet and 3G/4G for the mobile internet. Secondarily, cellular connections will grow for hard to reach or mobile objects (e.g., cars)."[4]

In this context, it would be unnecessary to allocate additional spectrum in which mobile broadband based devices can operate.

British Entertainment Industry Radio Group

The British Entertainment Industry Radio Group (BEIRG) is an independent, not-for-profit organisation that works for the benefit of all those who produce, distribute and ultimately consume content made using radio spectrum in the UK. Entities that depend on radio spectrum include TV, film, sport, theatre, churches, schools, live music, newsgathering, political and corporate events, and many others. BEIRG campaigns for the maintenance of 'Programme Making and Special Events' (PMSE) access to sufficient quantity of interference-free spectrum for use by wireless production tools such as wireless microphones and wireless in-ear monitor (IEM) systems.

As well as being vital in producing live content, wireless PMSE technologies play a key role in helping to improve security and safety levels within the entertainment industry and other sectors. Their benefits include improving the management of electrical safety, the reduction of noise levels, the development of safety in communications and reducing trip hazards. Wireless equipment and the spectrum it operates in are now crucial to the British entertainment industry.

BEIRG is a member of the Association of Professional Wireless Production Technologies (APWPT)[5], which promotes on an international level the efficient and demand-driven provision and use of production frequencies for professional event productions, as well as safeguarding such production frequencies for the users on the long run.

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[2] CBROnline, "Wi-Fi, Not Cellular, To Lay The Foundation For The Internet Of Things", http://www.cbronline.com/news/mobile-and-tablets/wi-fi-not-cellular-to-lay-the-foundation-for-the-internet-of-things-4307312 (accessed 23rd July 2014)

[3] CBROnline, "Internet of Things can't be built on LTE", http://www.cbronline.com/news/internet-of-things-cant-be-built-on-lte-4263590 (accessed 23rd July 2014)

[4] Goldman Sachs, *Internet of Things – Volume 1 Making S-E-N-S-E of the next mega-trend*, pg.4

[5] http://www.apwpt.org/