

Call for Input - A framework for spectrum sharing

About Arqiva

Arqiva is a communications infrastructure and media services company operating at the heart of the mobile and broadcast communications industry. Arqiva provides much of the infrastructure behind television, radio, mobile and other wireless communication in the UK.. We are at the forefront of network solutions and services in an increasingly digital world. We provide much of the infrastructure behind television, radio and wireless communications in the UK and have a growing presence in Europe.

We are active in the telecommunications sector, providing access to over 8,000 sites and infrastructure for mobile phone operators. We are building and running a national Internet of Things (“IoT”) network, which is now live, starting with 10 of the UK’s largest cities. In addition, our smart metering communications service, connecting 10 million homes using long-range radio technology, will be one of the UK’s largest machine-to-machine deployments. This will require sites across northern England and Scotland.

Arqiva is a founder member and shareholder of Freeview. We broadcast all eight Freeview multiplexes and are the licensed operator of four of them. We own Connect TV, the first company to launch a live IP streaming channel on Freeview. In terms of radio delivery, we are the licensed operator of Digital One – the national commercial DAB digital multiplex.

Arqiva is a major player in the UK’s satellite communications business, operating over 80 antennas to geostationary satellites, providing telemetry, tracking and command support services to some of the leading satellite operators. We are a major provider of permanent satellite services to both Freesat and Sky customers. We also provide global satellite based services to the broadcast, communications, security, oil/gas, and exploration sectors, using our five UK teleports as well as facilities in the Middle East, Asia and the Americas. Our satellite customers include Turner and NBC.

Our other major customers include EE, BT, H3G/Three, Telefónica/O2, Vodafone, BBC, ITV, Channel 4, Five, Sky, Classic FM, Airwave, Heathrow and Premier Inn.

Arqiva is owned by a consortium of long-term investors and has its headquarters in Hampshire, with major UK offices in London, Buckinghamshire and Yorkshire and operational centres in Greater Manchester, West Midlands, and Scotland.

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Executive Summary

Arqiva Limited has worked closely with Ofcom over many years supporting spectrum sharing developments and in particular the formulation of the Television White Spaces framework. As a result of this extensive engagement we are well placed to determine the 'art of the possible' in terms of spectrum sharing and welcome the opportunity to contribute to this 'Call for Input' from a strategic perspective. To this end, we see merit in noting the following aspects for consideration as part of the Ofcom review;

- Certainty of access to spectrum is a key enabler of new service / application development and hence licensed access on a shared basis has the potential to enhance shared spectrum use provided that there is no detrimental impact on the incumbent licensed use; and
- International co-ordination of band plans for shared access arrangements needs greater focus in order to enable harmonisation and scale economies and support the industry investment necessary;

Overall, it is worth recognising that the terrestrial broadcasting service has co-existed favourably over many years with the Programme Making and Special Events (PMSE) service on a licensed basis. This is clearly an arrangement that provides protection for and certainty of use for both applications and could be used as a reference for 'Best Practice.'

Detailed responses to questions

Question 1: Do you have any comments on the barriers to increased sharing that we have identified above? Which are the most significant and why? Are there others we should take into account?

In Ofcom's appraisal of the barriers to increased sharing it is important to reflect on one of Ofcom's principle duties which is to secure the consumer-citizen interests and this should be at the centre of its thinking with regard to the 'strategic framework for spectrum sharing.' In particular, within the context of Ofcom's strategic review of spectrum sharing we urge Ofcom to give due consideration to incumbent services on which citizen-consumers depend.

One specific aspect on which Ofcom touch but Arqiva believe is worthy of more detailed consideration is the extent to which International co-ordination of shared spectrum use will afford scale economies and offer security of access to specific frequency bands to warrant the substantial long term spending commitments to Research Development necessary .

From an Arqiva perspective the most significant barrier to the development of spectrum sharing is the degree of uncertainty that exists throughout the value chain, from technology development, to security of spectrum access and long term ability to guarantee a Quality of Service, which all combines to make the funding of innovative services and applications challenging.

Question 2: Have you experienced or are you experiencing the effects of these barriers? If so, in what circumstances and with what impact?

Arqiva Limited have been actively involved in TVWS developments since the initial consideration of Cognitive Devices in 2005. Clearly the complexity of co-existence with the incumbent uses, terrestrial broadcasting and Programme Making and Special Events (PMSE), has made the introduction of unlicensed shared use of the 470 – 790 MHz frequency range challenging. As a result there is potentially an increased risk of interference to the incumbent uses which runs counter to the consumer-citizen duty noted above and creates undue uncertainty to the incumbent licensed use.

Question 3: Are the categories of information set out in paragraph 5.5 the right ones? Are there any areas here that you think we should prioritise? Are there other types of information that we should be improving?

Recognising the importance of International co-ordination of frequency bands for shared spectrum use it would be sensible to make the information outlined in this section available on an International basis.

Question 4: Do you think the information about spectrum characteristics described in paragraph 5.9 would be useful? What information would need to be included as a minimum to make it useful?

It is our expectation that whilst generic information may be helpful at a strategic level, more specific and targeted information would likely be necessary, i.e. detailed information on technology and service characteristics to determine how best at a practical level to address co-existence and compatibility issues, both Nationally and Internationally.

Question 5: Have we identified the relevant market enablers, or are there others we should take into account? For each one, what is the potential for it to facilitate sharing and what are the downsides? Are there any that you think would be particularly effective or problematic?

Arqiva notes the mechanisms at Ofcom's disposal to manage spectrum and consider that the breadth of tools available should afford Ofcom sufficient discretion to enable spectrum sharing in the United Kingdom. One aspect worthy of broader consideration is whether these mechanisms are available to Member States within the European Union and if not to what extent this may hinder the co-ordinated deployment of spectrum sharing on an EU wide basis.

Separately and for clarity it is worth noting that spectrum auctions are not an enabler of spectrum sharing but rather a means by which one service might be displaced by an alternative.

Question 6: Have we identified the relevant technology enablers, or are there others we should take into account? For each one, what is the potential for it to facilitate sharing and what are the downsides? Are there any that you think would be particularly effective or problematic? What, if any, role should Ofcom play in helping to develop them?

As has been noted above it would seem that the International dimension has been overlooked when considering the enablers and in particular Ofcom's role in leading International co-ordination activities for shared use.

More specifically it is worth noting that whilst a considerable amount of focus has been applied to the development of the geolocation data base solution this solution still has major limitations in particular this approach does not work when devices are located in doors.

Question 7: Do you have any comments on the authorisation tools that we have identified above? Are there others we should take into account? For each one, what is the potential for it to facilitate sharing and what are the downsides? Are there any that you think would be particularly effective or problematic?

The authorisation tools at Ofcom's disposal are satisfactory to allow Ofcom to facilitate sharing. However, as noted above one of the key enablers of new services / applications development is the extent to which those new services are afforded certainty of access to spectrum. To this end one of the major challenges faced by the TVWS sector has been sustaining investment to enable innovation and service introduction whilst spectrum access has been a significant unknown. To this end we see merit with the Licensed Shared Access approach being considered by some Member States which will afford greater certainty of access for the shared spectrum use and also ensure protection of the incumbent spectrum use. An obvious successful example of this approach has been the licensed shared use of the terrestrial broadcast frequencies in the UK by the PMSE service.

Question 8: Are the characteristics of use we have identified sensible and sufficient to provide a high level indication of sharing potential? Are there other factors that we should expect to take into account? Are there any factors that you consider to be particularly significant? Are there any which we should attach less weight to?

One additional factor worthy of consideration is the economic impact both positive and negative of the shared use and whether as a consequence sharing is justified.