



**BBC response to Ofcom's consultation: A  
*framework for spectrum sharing***

**2 October 2015**

## Overview

1. The BBC welcomes Ofcom's consultation 'A framework for spectrum sharing' published on 31 July 2015. We also welcome new appropriate opportunities to share spectrum – both where we already hold authorisations and where we would like access to additional spectrum.
2. **The BBC already shares spectrum and has committed significant resources which have assisted Ofcom in exploring new spectrum sharing opportunities.** Wireless audio equipment used for programme making and contribution operates in interleaved spectrum licensed to DTT. When peak demand events take place, the BBC meets requests from other parties for access to spectrum licenced to news wireless cameras whenever possible. And, along with Arqiva, the BBC has been instrumental to the technical work required to explore the significant long-term potential of the appropriate use of white space devices (WSD), consistent with Ofcom's own objectives.<sup>1</sup> Three highly qualified BBC experts have contributed more than 1,000 hours of work to this project to date developing coexistence work, testing scenarios and enabling data exchange.
3. We have also experienced the impact of sharing implemented without full consideration of incumbent spectrum use: BBC Monitoring had to change operations after licences for broadband wireless access were awarded in 2003 without considering the impact on incumbent spectrum use.
4. **We ask to share spectrum with other users.** The BBC and other stakeholders welcomed proposals to allow continued short-term coordinated access for wireless cameras in the 2.3 and 3.4 GHz bands to meet exceptional peak demand, and in the case of the 3.4 GHz band, to support the transition to other bands.<sup>2</sup> We were, however, disappointed that plans to allow ongoing access to 3.4 GHz to support the transition were not taken forward, especially as Ofcom's statement indicated that provision of information for "upwards of" 40 locations would represent "a significant burden on new licensees."<sup>3</sup>
5. In considering a framework for sharing, we would encourage Ofcom to:
  - i. **Account for 'unpredictable need to access spectrum' among characteristics of use when considering how existing users are impacted**

For some users, characteristics such as 'unpredictable need to access spectrum' will play a key role in how sharing might be possible. Today this would be a concern for satellite newsgathering where use will always be unpredictable and in the absence of developments in dynamic spectrum access technology, these users will continue to be limited in their ability to share spectrum. Other users have a different set of unpredictable needs. Monitoring operations for example, access a large range of frequencies across satellite spectrum used by the world's broadcasters. Flexibility is essential in order to be able to monitor the required national and international satellite television and radio broadcasts and to be able to change when they change. We would expect non-licenced users of spectrum (e.g. receive only or licence exempt) uses would also be considered and new receiver characteristics would not immediately be expected to be in place.

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<sup>1</sup> <http://www.bbc.co.uk/rd/projects/tv-white-space-devices>

<sup>2</sup> <http://stakeholders.ofcom.org.uk/binaries/consultations/pssr-2014/responses/BBC.pdf>

<sup>3</sup> [http://stakeholders.ofcom.org.uk/binaries/consultations/pssr-2014/statement/Statement\\_on\\_camera\\_strategy.pdf](http://stakeholders.ofcom.org.uk/binaries/consultations/pssr-2014/statement/Statement_on_camera_strategy.pdf)

**ii. Ensure any requirements to provide information are proportionate**

While licence holders should not be able to refuse legitimate requests, sharing spectrum is a resource intensive endeavour and we urge Ofcom to ensure that requirements in terms of time required from stakeholders to facilitate sharing are proportionate to the expected outcome.

**iii. Apply sharing requirements fairly**

A new framework for spectrum sharing should not require cooperation from one group of spectrum users, while allowing another to refuse reasonable requests to share. As detailed above we have committed significant resources to facilitating new opportunities when a potential new user has approached Ofcom (e.g. the white spaces project), but our suggestions of sharing (e.g. transitional access to the 2.3 and 3.4 GHz) bands have not been granted on the basis these would be too onerous for other licence holders. In this respect, we would also welcome clarity around how sharing is initiated, how trade-offs will be considered, and what plans Ofcom has to take account of any differential impact on stakeholders.

6. We set out more detailed comments below in response to the most relevant specific questions raised in the consultation.

## Answers to questions in Ofcom's consultation: A framework for spectrum sharing

*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?*

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

7. In many cases, the time and complexity involved in making sharing work is a barrier. The tools and recourses required to assess and measure the risk of interference as a result of sharing are non-trivial as is the issue of monitoring and addressing unforeseen impacts after sharing is implemented. We would welcome clarity about how these costs will be met and what will be considered when Ofcom is deciding whether the resources licensees have to devote to sharing initiatives are reasonable.
8. Availability of equipment is a key consideration when trying to identify spectrum for sharing, and a barrier to support for sharing if it is not available where spectrum would otherwise be suitable.
9. We previously expressed our support for Ofcom's proposals to allow continued short-term coordinated access for wireless camera users in the 2.3 and 3.4 GHz bands to meet exceptional peak demand because our equipment already worked in these bands. A typical tuning range for Vislink is 1950 to 2700 MHz and a Cobham 2000 to 2500 MHz so the proposal for 2.3 GHz was particularly helpful. We were, and still are, limited by the tuning ranges of camera equipment and this equipment is purchased for the bands that we have access to at any given time.
10. In respect of availability of information, this is critical to facilitate sharing, but the benefits need to be proportionate with the cost and effort required to provide the information.
11. Crucially, in the context of sharing being an increasingly important tool to meet demand, we also believe that the requirement to provide information to facilitate sharing should apply to all spectrum users whenever possible. We would welcome clarity from Ofcom as to the criteria involved in determining how providing information to make sharing work in practice is considered appropriate in some cases (e.g. provision of information on DTT coverage in the UHF band to allow sharing by WSDs) and not in others (e.g. about mobile base station deployments).

*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?*

12. Information about what is used, not just what is authorised, is critical. There should be two considerations in respect of use and authorisation:
  - i. where a licence holder is not transmitting in the spectrum at a particular time or geographic location; and
  - ii. where spectrum is being used without a licence (e.g. for licence exempt purposes or by receive only earth stations).
13. In considering usage Ofcom will also want to consider those services that have unpredictable usage patterns such as newsgathering. News coverage often requires a rapid response to an

evolving news story as part of normal day to day operations. Evidently, an evolving news story can happen at any time of the day and anywhere, and we would expect to be able to dispatch the nearest news team to report that story. For such uses information would need to be gathered in real time and this would require a step change in the capability of dynamic sharing technologies such as sensing.

14. In the case of monitoring operations, a large range of frequencies across satellite spectrum used by the world's broadcasters is required in order to be able to monitor whatever frequencies are being used. Flexibility is essential in order to be able to monitor the required national and international satellite television and radio broadcasts and to be able to change when they change.
15. As part of managing coexistence, decisions will have to be taken in respect of acceptable protection requirements for incumbent services. For users that do not hold national block licences, it is not clear how these decisions would be taken or who would determine the acceptable level of risk to incumbents. Sharing is likely to increase the risk of interference and potentially the quality of service enjoyed by end users so having clarity around the role and scope of Ofcom, incumbent users and prospective new sharers in facilitating or setting such parameters would be welcome.
16. Sharing with any service which does not have a known receiving location or is not managed by a professional organisation, able to accurately declare its true location, will always be hugely complicated. This would be a particular issue for broadcast systems where the location of users receiving a broadcast signal is unknown. Freesat, for example, is sold without a contract so there is no information about where receivers are being used for viewing. Even in the case of DTT, where there are different frequencies in use in different parts of the UK, there are overlaps between adjacent transmitters' coverage and for many locations it is not clear exactly what frequencies are being used. Sharing in these situations is extremely complex as the WSD work has shown.
17. For information to be useful to potential spectrum sharers, it will need to be accurate and up-to-date. This could impose a burden on licence holders which may not be justified across all bands. We expect Ofcom will weigh up the potential benefits expected to be delivered from increased sharing opportunities with any additional obligations to supply and update information.

*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?*

18. The BBC welcomes Ofcom's statement that licences "define rights but generally do not provide exclusivity of use" as well as the recognition of the barriers to gaining spectrum access once block assigned licences have been issued. Without regulatory intervention such as 'use it or lose it' clauses this can result in spectrum lying fallow – despite demand from alternative uses.
19. The BBC would welcome further clarification from Ofcom around the expectations that licence holders will contribute to 'market enablers' for example by providing information. In particular when information is required, what would be considered proportionate and when requests for information are triggered (is it necessary for example for all licence holders to provide information where there is no demand for sharing opportunities?)
20. In respect of the prospect of spectrum auctions we would urge Ofcom to consider the resources and time required to participate in spectrum auctions which might not be feasible for all those who seek to make use of sharing opportunities.

*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?*

21. Technology enablers still require a great deal of time and resources to make them work for the intended purpose. The WSD availability database needs a lot of information before it can work out how much spectrum is available to WSDs. For the trial, much of this data had to come from the licence holders and required a considerable investment in time and resources. Other technologies such as sensing and/or 'detect and avoid' that might theoretically reduce this labour have not been shown to work in practice.
22. The consultation reminds us of Ofcom's role in helping industry to define receiver characteristics in respect of the new Radio Equipment Directive and the hoped for implications in terms of certainty of device performance. This may increase certainty around the performance of new equipment in the long term. However, it will take at least 10 years for full market penetration of equipment that complies with the new specifications. In the meantime there will be a need to consider the impact of any sharing plans on existing equipment.

*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?*

23. Paragraph 5.38 sets out a tiered access approach with DTT (tier 1), PMSE (tier 2) and WSD (tier 3). We agree with and welcome this categorisation and look forward to further information about the legal and regulatory underpinnings to this structure. In particular, we note the prioritisation of DTT over services like PMSE which by their nature use geographically interleaved spectrum. We would anticipate this prioritisation also suggests that national DTT services take precedence over DTT services which use interleaved spectrum like local TV.
24. If, as Ofcom suggests here, tiered access is to be based on value we would request further consultation on how value is to be arrived at. Demand from services as well as availability (or not) of alternative bands should also be considered.
25. In the document Ofcom also suggests a requirement to provide information might become a licence obligation. We recognise the value in this, but it must be proportionate and recognise the characteristics of each particular use (e.g. unpredictable location and time requirements and that such usage patterns would not make information provision possible).
26. As Ofcom reminds us at the European level the concept of licensed shared access (LSA) is being trialled as a facilitator for sharing. In many instances, this has been set out as a way for mobile operators to share with PMSE and other incumbents in the 2.3 GHz band. If this proves acceptable in other territories, we would encourage Ofcom to consider the benefits of enabling PMSE access to the 2.3 GHz band – certainly until mobile services are deployed as has been previously suggested. This could be facilitated by a geolocation database with appropriate co-existence parameters and tuned filters to protect video links. While this is clearly less convenient than current arrangements, if workable it would help solve congestion problems associated with large events.

*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?*

27. Ofcom may also want to consider new category for temporary sharing (e.g. where a band is not being used either in the short term or uncertain timescales). Such a situation has recently arisen in the context of the 2.3 and 3.4 GHz award. Both of these bands can be (and have previously been) used by PMSE wireless cameras. Stakeholders are fully aware that these arrangements would be temporary and long term investment decisions could not be predicated on long term access to these bands. In cases where such situations arise, it would be in keeping with Ofcom's duties to secure optimal use of spectrum and prevent such spectrum lying fallow.

**ENDS.**