BBC response to Ofcom's *'Space Spectrum Strategy'*

10 May 2016

Overview

1. The BBC welcomes the opportunity to respond to Ofcom's Space Spectrum Strategy Consultation.

2. The BBC relies on the use of satellite spectrum for many different aspects of its operation both in the UK and globally. Audiences access our content on multiple platforms - in addition to receiving content via satellite spectrum use direct-to-home, satellites are also critical for contributions and communications which support the creation and distribution of content.

3. The BBC is particularly pleased to see the recognition in this consultation that "one important characteristic of spectrum use by the satellite and space science sectors, is that citizens and consumers can benefit from spectrum use outside the UK" (paragraph 5.3). We agree that citizens in the UK can benefit from spectrum use in other countries. As an internationally-recognised brand the BBC's international use of spectrum brings benefits to those in UK through coverage of global news events and also through BBC World Service which performs a valued role for UK public diplomacy.

4. We broadly agree with Ofcom's space spectrum plan, but we wish to raise questions which it will be essential to resolve before proceeding with sharing plans. In particular, how will satellite reception be taken into account when sharing? Registration of downlinks is not always required, nor desirable. Without acknowledgement of both uplink and downlinks (inside or outside the UK) an incomplete picture of UK use emerges which is evident in Ofcom's use map. For DTH applications and for onwards distribution of broadcast services by satellite, for every licenced uplink there are multiples of unregistered downlinks (both within and outside the UK) and these are not reflected in this analysis. Without considering reception, the value of satellite spectrum use will be undermined. This will be a critical issue for Ofcom to resolve when developing sharing plans.

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

Answers to questions

Question 1: How useful is the interactive data that we have provided on our website and why? How can the presentation and interactivity of the data be improved? How frequently would it be useful for us to update the information and why?

6. The BBC welcomes Ofcom's intention and efforts to increase transparency and provide stakeholders with a clear picture of spectrum use by the satellite and space science sectors (paragraph 2.11).

7. The data presented represents a snapshot in time. Before developing plans based on this snapshot, up-to-date information for particular bands of interest would need to be confirmed. The BBC does not believe it would be practical for stakeholders to refresh data regularly. While the BBC was in a position to direct resources to compiling data on this occasion, we believe the usefulness of such data to potential future users must therefore be weighed up against the burden of information gathering for current licence holders. We also note not all users contributed and there is therefore a risk of presenting only a partial picture.

8. Where respective uplinks and downlinks are both within the UK, the interactive data gives a useful picture. However, it is not always clear where uplinks or the downlinks associated with them are located, i.e. how an uplink ties to a downlink. This will be a crucial consideration when Ofcom develops sharing in the UK plans so as not to remove value from existing users. It would also be useful to know where the far end of any given link may not be in the UK or where (as in the case of DTH) the downlink may not appear at all (because there is no requirement for licencing). In the case of DTH, unlicensed receive only downlinks could account for ubiquitous usage of large parts of a space spectrum allocation.

9. We also note that the data derived from Ofcom's licensing database only shows activity of TES and therefore only reflects part of the BBC's more extensive newsgathering operations using satellite technologies. The BBC TV SNG fleet is made up several elements: conventional TES Ku-band uplinks, smaller VSAT (as in smaller units operating within a VSAT network and therefore licensed as one network) for TV feeds both live and "store and forward" and a small number VSATs in licence-exempt Ka band using consumer broadband over satellite technology.

10. Finally, the interactive data is billed as provides "an insight into the use of space spectrum in the UK", however the satellite filings data also has an option to view both the filings visible in the UK and those outside the UK. It is therefore unclear which data, in particular that provided by stakeholders, relates only to UK spectrum use.

Question 3: Do you agree with the application specific trends we have identified for the satellite sector? Are there other trends that could have implications for spectrum use?

11. In the UK, changes in consumer preferences (e.g. for higher picture resolution) could increase the demand for satellite spectrum from programme makers and for distribution. Whilst it is fair to assume use of more spectrally efficient compression standards like HEVC will increase in the future, the BBC has only very recently made the world's first live HD HEVC contribution (for the coverage for the London Marathon.) Although early results look promising that such technologies will meet operational requirements and increasing spectral efficiency, this technology is still in its infancy and will take some years to reach maturity. Most manufacturers are concentrating on UHD HEVC encoders, which could mean that broadcasters like BBC News with core requirements for HD find it difficult to get the necessary equipment. At the moment we believe any increases caused by higher resolutions are likely to be met by improvements to technology. However, we would expect Ofcom to revise its conclusions if demand for broadcasting spectrum increased in the future.

12. The UK focus of the application specific trend for broadcasting also reflects an incomplete picture. If higher resolution and demand for additional channels are considered in the global context, then conclusions look different. For the BBC international services, transition is more likely to require additional spectrum in order to launch new services with the existing services on air and give time for users to migrate. The end of simulcasting is difficult to foresee because of continued demand for SD in some countries. Any transition to higher throughput modulation and encoding standards will lead to an increase in spectrum usage due to the need to simulcast content. Some techniques such as statistical multiplexing are not appropriate for simulcast content. It is the BBC's recent experience that finding additional spectrum to facilitate migration to higher efficiency standards such as DVB-S2 is very difficult if not impossible due to spectrum constraints already imposed on the satellite service (for example on Intelsat 10-02 for C-Band to Africa).

Question 6: Do you agree with the applications we have identified as having particular potential for growth in consumer and citizen benefits?

13. We agree with Ofcom that broadcasting delivers benefits to citizens and consumers and these benefits will continue to grow in the coming years (e.g. meeting consumer demand for higher resolution video.) We also agree that at the moment it appears these benefits are likely to be delivered through new technologies with improved spectral efficiency, without an anticipated increased in spectrum demand.

14. While Section 4 of the document included material on the distribution of television, radio and interactive content (paragraphs 4.9, 4.10), the section's title was "Broadcast TV". Additionally,

material on contribution, which we would expect to include contribution for television, radio and interactive content, came under the heading "Contribution and Occasional Use (OU) TV". The application specific trends for broadcasting (paragraphs 6.11-6.16) also relate to TV, although entitled "Broadcasting (DTH TV, Contribution and distribution)".

Question 7: Do you agree with the three priorities that we have proposed for our strategy? Are there other priorities that are as important, or more important, for citizens and consumers and why?

15. The BBC supports spectrum sharing and has committed significant resources to assist Ofcom in exploring new spectrum sharing opportunities. For example, three highly qualified BBC experts have contributed more than 1,000 hours of work to the White Space Device project developing coexistence work, testing scenarios and enabling data exchange. 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 exiting users.

16. We agree that spectrum sharing is an important area which deserves further work and this is particularly true for coexistence with satellites. As Ofcom rightly recognises, satellites cannot be altered once in the sky so there is less scope for mitigation measures that might facilitate sharing between terrestrial users (e.g. installing filters). Satellite use is different in other ways too. The international nature means links cross international boundaries. In addition the unknown or unlicensed receiving locations of satellite systems pose a significant challenge to coexistence work. These are problems that will need to be addressed to provide certainty for existing users. It is therefore welcome that Ofcom proposes sharing as a priority area of work.

17. Ofcom's analysis is rightly focused on benefits to citizens and consumers in the UK and on satellite services within the UK. However we welcome Ofcom's recognition of wider benefits to citizens in the UK from satellite usage elsewhere, for example from live news reporting from around the world, weather forecasting and public diplomacy.

Question 10: To what extent does the proliferation of filings for 'paper satellites' create costs or barriers that hinder the provision of satellite services to UK citizens and consumers?

18. The proliferation of filings for "paper satellites" has a negative impact on the provision of services by satellite. Lack of certainty about filings, ownership and responsibility can make it difficult for the users like the BBC to identify suitable satellites to use and also to resolve incidences of harmful interference when they occur.

19. BBC World Service distribution requires us to be able to identify satellites which will provide us with reliable, affordable international delivery. The BBC has suffered from a number of

deliberate and accidental incidents of interference to its satellite services. Due to the nature and number of satellite filings it has sometimes been extremely difficult to ascertain how to lodge complaints. The biggest problem for a user suffering interference is that the file name and notifying administration is often very different from the country of registration and name of the satellite operator. It is therefore difficult to ascertain which regulatory body has responsibility.

20. In a recent incident, the launch of a new satellite could have resulted in the total loss of BBC services across Asia because of the potential for inter-satellite interference. After spotting the potential problems, we had only two weeks to migrate 200+ downlinks to new frequencies. This was a difficult process with an unforeseen cost ultimately paid for by UK citizens and consumers, with no opportunity to seek regulatory redress.

21. Ofcom engagement in international efforts to make the global use of satellite spectrum more efficient and transparent would be welcomed by the BBC.

Question 17: Are there any improvements we should consider in how we enable existing benefits to continue, whilst exploring sharing / new uses?

22. The BBC welcomes Ofcom's recognition of the reasons why predictability of spectrum access is important for satellite services. Recognition of the need to consider "the benefits delivered by incumbent services and the incremental impact of sharing on incumbents" (paragraph 7.47) is essential.

23. We have previously experienced the impact of sharing implementation without full consideration of incumbent spectrum use: BBC Monitoring had to change operations after licences for broadband wireless access were awarded in 2003.

24. We therefore ask Ofcom to fully appreciate the complexity of current use and the parameters required in any co-existence study. With respect to how broadcasters use satellite spectrum, this needs to include consideration of unpredictable usage patterns for newsgathering and a requirement for flexibility of use for monitoring. Information about what is used, not just what is authorised is critical.

25. In order to support existing benefits it will be important that Ofcom can protect existing operations which may use unknown or unlicensed receiving locations. 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. However, from our reading of the Spectrum Sharing Statement it is not clear how Ofcom will be able to achieve this. This should also be a focus of Ofcom's work.

26. While licence holders should not be able to refuse requests, sharing spectrum and providing information to facilitate sharing is a resource intensive endeavour. We urge Ofcom to ensure that the time required from stakeholders to facilitate sharing is proportionate to the expected outcome.

Question 18: Do you agree that the applications we identify do not need to be a particular focus for regulatory action in the short to medium term?

27. Broadly we agree with Ofcom's assessment that higher resolution broadcast TV content (e.g. HD and UHD) is likely to be delivered within existing spectrum allocations as a result of developments in technologies allowing efficiency gains in spectrum usage.

28. We note that the supply and demand analysis in Annex 5, which supports this conclusion only focuses on Direct to Home TV This is just one link in broadcasting distribution and programme making chain where satellite use delivers benefits. While we agree with Ofcom's assessment that in the UK there are more options for contribution and distribution, should additional capacity be needed, this does not mean this comes at no cost. BBC newsgathering, for example, uses a satellite management system which allows flexible and efficient use of transponder space but is only available on two satellites. It is therefore not easy or quick to move the system on to a different satellite. BBC World Service distribution to transmitters and partners require a site visit by an engineer to switch orbital location because of mechanical constraints. Due the multiples of earth stations involved and the varied geographical locations, this is a lengthy and expensive process.

29. Although we agree that higher resolution TV content need not be a focus in the short term, we would hope Ofcom would revisit its assessment if the demand picture changes. For example, if new technologies do not deliver the expected spectral efficiencies or there is an ongoing need for simulcast. We would welcome the opportunity to contribute to Ofcom's further work in this area.

ENDS.