A Response to the Ofcom consultation on the future role for spectrum sharing

28th October 2013

1 Overview

Webb Search is pleased to provide this response to Ofcom's consultation on spectrum sharing. Webb Search has recently published a book "Dynamic White Space Spectrum Access"[1] which covers much of the material discussed here and may be of use to Ofcom in considering its strategy.

In overview we believe that spectrum sharing is a very important tool for a regulator moving forwards. It is getting ever-harder to clear bands and repurpose them and in some cases it may be simpler, faster and more effective to allow shared access to bands. This is particular relevant in bands such as broadcasting and those owned by Governmental users (eg military, air traffic). Sharing can also allow innovative new ideas to be trialled with lower risk. Different forms of sharing can provide differing levels of certainty of access enabling a "staircase" approach[2] to growth for new ideas, applications or technologies.

Broadly, sharing should be seen as another tool in the spectrum regulation toolbox, to be applied in particular situations as relevant. Given that regulator's aim not to identify winning technologies or even uses of spectrum it may not be appropriate to aim to fit it to particular applications. Better rather to provide a range of access methods to spectrum and allow each user, application or operator to select the approach that suits them best. For example, there is no reason why M2M is particularly suited to a sharing approach, but it may be that many new concepts or application areas find sharing a suitable way to deploy initially. This is why, for example, MNOs deploying M2M solutions tend to do so within their licensed spectrum whereas new technologies such as Weightless tend to seek unlicensed spectrum (which is generally shared with others).

In this response we have concentrated on general approaches to sharing rather than specific areas such as Wi-Fi.

2 Response to questions

Question 7: Which frequency bands are most likely to be best suited to providing geographical shared access, including via a geolocation database approach, for use by mobile broadband, for example small cells and M2M applications?

Broadly, these will be bands that are harmonised across regions (eg Europe), where incumbent usage is relatively light, well-defined and amendable to database categorisation. For M2M usage where cells are large these will typically be frequencies below 1GHz.

Question 8: Would access to these bands best be realised through licensing or licence exemption?

This is a subset of the more general spectrum management question as to whether access to any band, shared or not, should be licensed or unlicensed. Generally, regulators have accepted that a range of both approaches is needed across most frequency bands. The advantage of a database

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[1] Available as a free download from www.webbsearch.co.uk .
[2] W Webb (rapporteur), "Spectrum as a resource for enabling innovation policy", The Aspen Institute, March 2013.

approach is that the type of access can be changed over time, or be dynamic – for example requiring payment (and so closer to licensed) when congestion starts occurring. Sharing allows many approaches between licensed and unlicensed such as restricted sharing where only a limited number of users are allowed into a band but share spectrum with each other. Just as with Q7 it is hard to answer this question specifically, each band, geography and methodology needs to be considered on a case-by-case basis bearing in mind previous decisions and emerging demand.

Question 9: Do you believe that tiered shared access to a range of spectrum bands has a role in meeting demand for mobile and wireless data and, if so, which applications and devices do you think will be particularly suited to this access model?

Tiered shared access likely does have a role. See the "staircase" approach mentioned earlier for more details. It will be difficult to predict exactly what tiering arrangements should be adopted and which applications will find this most appropriate as this will change over time and hence the regulator should seek to put in place a flexible framework and then react to emerging usage.

Question 10: Do you believe DSA could play an important future role in the future in enabling a better quality of service and low barriers to spectrum access alongside conventional licensed and LE spectrum approaches?

Yes. It is clearly already playing an important role in stimulating new applications and technologies in the TV white space. See "Dynamic white space spectrum access" for more information. It is an important element of a balanced strategy of access to spectrum.

Question 11: What barriers still remain to the realisation of cost-effective sensing appropriate for low-cost consumer devices and what activities are ongoing to try to address them?

From the research performed by Ofcom and the FCC is seems unlikely that sensing will ever be a viable proposition to accurately detecting use of spectrum by others. Further, the advantages offered by database control are so compelling that this approach should be maintained for the foreseeable future.

Question 12: Over what timescales could DSA become a mass market proposition?

One of the earliest likely applications for DSA to spectrum is the Weightless M2M technology. Smart cities are expected to be deployed during 2014 and nationwide networks during 2015.

Question 13: What role should Ofcom play, if any, to support the development of DSA and relevant technologies?

Ofcom should not pick technological winners. Instead, it should define the regulatory playing field as quickly and clearly as possible and then ensure there are minimal barriers to entry and innovation. By opening TV white space on flexible and balanced (non-conservative) terms in the next few months and then moving onto opening other bands as soon as possible Ofcom will maximise the chance of rapid development of DSA-enabled technologies.

Questions 14 to 17.

It is unclear that there is a problem with access to spectrum on a research basis that needs resolving through DSA. In most cases it is possible to obtain a temporary licence for test and development purposes in the frequency band of interest. R&D equipment generally takes some time to develop and so speed of access is rarely relevant, more important is knowing that the spectrum will be available once the equipment has been built and tested. Researchers can also access any spectrum available under DSA rules. While there is no harm in providing short-term access for testing purposes, this should not be at the expense of slowing down more general DSA activities within Ofcom.

3   About Webb Search

Webb Search is an independent consultancy providing expertise and support across the area of communications and related regulation. It was founded by Professor William Webb in 2013. William is CEO of the Weightless SIG, President-Elect of the IET, a Visiting Professor at the 5G Innovation Centre at Surrey University, a Fellow of the Royal Academy of Engineering and the author of 13 books, over 100 papers and 20 patents. He has worked for consultancies, Ofcom, Motorola, start-ups including Neul and is involved with academia, Institutions and Government.

More information can be found at www.webbsearch.co.uk .