Arqiva response to digital dividend: clearing the 800 MHz band

About Arqiva

Arqiva has its headquarters in Hampshire, with other major UK offices in Warwick, London, Buckinghamshire and Yorkshire. It now has 9 international satellite teleports, over 70 other manned locations, and around 9000 shared radio sites throughout the UK and Ireland including masts, towers and rooftops from under 30 to over 300 metres tall.

The company is owned by a consortium of long-term investors led by Macquarie Communications Infrastructure Group and has 3 operating divisions: Terrestrial Broadcast, Satellite & Media and Wireless Access.

Arqiva is technology- and service-neutral and operates at the heart of the broadcast and mobile communications industry. We are at the forefront of network solutions and services in an increasingly digital world. The company provides much of the infrastructure behind television, radio and wireless communications in the UK and has a growing presence in Ireland, mainland Europe and the USA.

Arqiva is a founder member of Freeview (Arqiva broadcasts all 6 Freeview multiplexes and is the licensed operator of 2 of them) and was a key launch technology partner for Freesat. Arqiva is also the licensed operator of the Digital One national commercial DAB multiplex.

Alongside the BBC, Arqiva's Spectrum Planning Group plays a critical role in planning Digital Switch Over (DSO).

In addition for broadcasters, media companies and corporate enterprises Arqiva provides end-to-end capability ranging from –

- outside broadcasts (10 trucks including HD, used for such popular programmes as Antiques Roadshow, Question Time, Proms in the Park, a wide range of sporting events and the IIFA Awards 2007 "BollyWood Oscars" watched by 2 billion people worldwide);
- satellite newsgathering (30 international broadcast SNG trucks);
- 10 TV studios;
- spectrum for Programme-Making & Special Events (PMSE) through subsidiary JFMG;
- playout (capacity to play out over 70 channels including HD); to
- satellite distribution (over 1200 services delivered).

In the communications sector the company supports cellular, wireless broadband, video, voice and data solutions for the mobile phone, public safety, public sector, public space and transport markets.

Major customers include the BBC, ITV, Channel 4, Five, BSkyB, Classic FM, the five UK mobile operators, Viacom, Turner Broadcasting, Metropolitan Police and RNLI.

Introduction

Arqiva is hugely supportive of wireless broadband and we recognise the desirability of a mix of spectrum bands - some better suited to rural, others to urban – which align with standardised equipment specifications, being made available across Europe.

Clearly there will be considerable value to UK plc from early clearance of DVB-T from Channels 61 and 62 and PMSE[1] from Channels 67 – 69. Earliest clearance of DVB-T would require a DSO-integrated implementation, which Arqiva is currently investigating for Ofcom, but the complexity of this should not be underestimated - irrespective of the size of funding made available to secure earliest clearance. New frequency (including international co-ordination) and transition plans will be required, which will impact infrastructure and require a major re-engineering plan.

But funding could still help to speed up clearance, helping to transition PMSE sooner with minimal disruption to users and funding targeted communications and potentially an assistance scheme for Freeview viewers to minimise the disruption of receiver re-scans. Whatever the scope of funding, early certainty on the source and timing would assist planning.

However clearing Channels 61 - 69 must not be achieved at the expense of DVB-T, including preserving the potential for the Freeview platform to grow.

Nor should clearance be at the expense of major disruption to PMSE access to spectrum, which is a long-standing and essential input to the broadcasting ecology where there are many programmes, including sports and live news, which would either not be practical to shoot without timely access to suitable spectrum or viewers' appreciation of the broadcast would be seriously reduced. We also recognise the key role which PMSE plays in theatres and touring productions.

A further point worth noting, although it is isn't mentioned in this consultation, is that with wireless broadband now almost certain to be deployed in digital dividend spectrum as part of mixed networks comprising both UHF spectrum (whether 800 or 900 MHz) for coverage and higher frequency spectrum (2.1 GHz or 2.6 GHz) for capacity, this again calls into question Ofcom's previous proposal[2] for digital dividend spectrum that the initial licence term should end in 2026, which would provide for only 12-13 years' guaranteed UK-wide use of the 800 MHz spectrum.

Even for DTT, with a proven business model, the considerable investment required (with incremental network infrastructure costs required by the Reference Offers to fall to new multiplexes) against a background of rapid change in technology and usage patterns for audiovisual distribution (and, with DVB-T2/Freeview HD specifically impacting supply of DTT capacity), means that this national minimum term wouldn't provide the necessary level of comfort to bidders that they would be able to generate a reasonable return.

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[1] Programme-Making & Special Events, such as the use of radio mics.
[2] See page 130 of Ofcom's 2006 DDR consultation (http://www.ofcom.org.uk/consult/condocs/ddr/ddrmain.pdf).

Arqiva would be surprised if potential providers of wireless broadband did not feel the same given the 20 year minimum term offered by 2.6 GHz licences, where there is considerably less risk that licences would be revoked after the minimum term.

Consequently, while recognising the attraction to Government of simultaneous expiry of existing Freeview multiplex licences and the minimum licence terms for cleared DDR spectrum, the delay in use of this spectrum becoming final which will result from implementation of the "hybrid option" surely must be sufficient justification alone for the minimum DDR licence term being extended beyond 2026, perhaps with a minimum term aligned with that of 2.6 GHz licences.

Consultation questions

The costs and benefits of clearing the 800 MHz band

Question 1. Do you agree that clearing DTT from channels 61 and 62 and PMSE from channel 69 to align the upper band of cleared spectrum in the UK with the emerging digital dividend in other European countries is likely to further the interests of citizens and consumers to the greatest extent?

As a technology- and service-neutral company, Arqiva supports Ofcom's starting position of not prescribing particular uses of digital dividend spectrum. As originally proposed by Ofcom, this would have enabled those who wished to deploy wireless broadband to have bid against those wishing to deploy DVB-T, the latter having the opportunity to bid for spectrum in all 3 underlying aerial groups.

While Arqiva would not wish for the potential for Freeview to grow to be unduly constrained we recognise that, since the outcome of the World Radiocommunication Conference 2007 (WRC-07), the interests of citizens and consumers would be best served by potential UK wireless broadband operators being offered the opportunity to acquire spectrum for this purpose which is aligned with the CEPT Band Plan for the European non-mandatory harmonised sub-band in Channels 61 – 69.

Indeed given the significant consumer take-up of wireless broadband, and the principal objective of Digital Britain to deliver broadband of at least 2 Mbit/s to those currently denied that option, there is an argument for Ofcom not to unnecessarily complicate, and potentially delay, the auction of 800 MHz spectrum by offering more types of Spectrum Usage Rights (SUR) than there seems to be realistic demand for.

With anticipated reductions in power for DVB-T use of Channels 61 – 69 from the GE-06 assignments, and the limited prospects of broadcasters outbidding potential wireless broadband operators, currently it is hard to detect any interest in this spectrum beyond those wishing to deploy FDD LTE.

In addition, given the absence of any standardisation for either LTE or WiMAX in the lower released block, the 2 released blocks have effectively become de-coupled so that, for all practical purposes, the only SURs which need to be offered for the lower released block are those for DVB-T and MMS.

For Freeview to retain a considerable degree of its current potential to grow as a result of mobile broadband being deployed in Channels 61 – 69, it will be essential that major packages of interleaved spectrum in aerial group C/D are offered to the market alongside the lower released block to ensure that bidders wishing to deploy a DVB-T or –T2 Multi-Frequency Network don't face an aggregation risk (which would be reflected in the prices bid for spectrum). However, even with this, the coverage offered by such interleaved spectrum is expected to be considerably lower than would have been provided by cleared in-group channels.

With no substitutability between the released blocks, the offer to the market of either block should not be delayed by any attempt to auction both blocks in the same auction.

Moving DTT from channels 61 and 62

Question 2. Do you agree that the proposed DTT migration criteria are proportionate and appropriate? If not, please explain why and clearly identify any other criteria you believe should be adopted and why.

Arqiva agrees that this will be complex, challenging and resource-intensive.

Based on analysis to date, the clearance of Channels 61 and 62 will directly affect over 230 stations which are transmitting on these channels and over 240 relays which receive their service feeds via RBL link. Depending on the hybrid scheme that is adopted, and considering alterations to stations which utilise the channels that are being proposed to allow 'in-band' operations to be preserved, over 500 stations will require transmission modifications whilst over 460 will require modifications on the receive side. This is prior to considering additional works which may be required on other stations to avoid potential interference issues. This is clearly a major undertaking.

Consequently, in order not to disrupt or delay the DSO programme, Arqiva shall need to make additional resource available to identify, plan and implement transition the high power DTT network from the current frequency plan to new '61/62' Cleared Plan. These activities are also likely to place an additional burden on Digital UK. However Arqiva agrees that the benefits should far outweigh the costs.

We also agree with the proposed DTT migration criteria that:

1) there should not be a material adverse effect on DSO;
2) existing authorised and planned users of channels 61 and 62 should not bear the additional costs of clearing the spectrum; and

3) any solution should be consistent with existing policy objectives for DTT coverage after DSO, and minimise the impact on viewers of broadcasts from the existing DTT multiplexes.

To this end, Arqiva supports the implementation of the "hybrid option".

Notwithstanding the proposed DTT migration criteria, Arqiva would be understandably concerned if the coverage (i.e. reliable reception, taking account of aerial groups) of the COM muxes were disproportionately affected by the accommodation of mobile broadband. If that were the case we would expect the financial package, from Government or new spectrum licensees, to reflect that.

It is understood that the hybrid plan should prevent Freeview multiplexes from being left out of group but, should this arise in certain cases as a consequence of clearing broadcasting from Channels 61 and 62, then the provision and installation of free wideband aerials to affected viewers in those areas would not seem disproportionate.

Question 3. Do you have views on the options identified and our assessment of them? Do you believe there are other, superior options, and, if so, why? Do you agree that the hybrid option is most consistent with the DTT migration criteria?

Yes, notwithstanding that it will be impossible to identify all of the sites affected[3] until the final network plan is agreed, Arqiva supports the adoption of the hybrid option which should minimise the impact on viewers albeit that, as with any 2 step approach, the release of Channels 61 – 69 in their entirety would be delayed slightly.

But minimising the impact on viewers will be more than a technical exercise – it will be essential that the implications are taken on board by Digital UK in its communications. The recent frequency changes for multiplexes at Rowridge clearly shows that many viewers are unprepared for re-scanning their receivers.

Question 4. Do you have views on the implementation-timing options identified and our assessment of them? Do you agree that DSO-integrated implementation is most consistent with the DTT migration criteria? If not, why not?

Whilst Arqiva agrees that a DSO-integrated implementation would be desirable to minimise re-engineering works, alleviate implementation complexities and to reduce disruption to viewers, the date when such integration might reasonably occur is likely to be late in the DSO programme due to the planning complexities which lie ahead.

[3] In addition to sites which are planned to use Channels 61 and 62 in the switchover plan, and relays which use those Channels as input channels, some additional sites will be affected by interdependencies.

It will take time to develop and co-ordinate new frequency and transition plans and to re-analyse RBL paths. These will in turn have an impact on the infrastructure but, in order to maintain the DSO rollout programme, it is highly unlikely that such changes could be introduced until relatively late in the programme and, as a result, a major re-engineering plan would then be required. It should also be noted that the extent of the required planning work shall be equally significant and careful management of resources shall be required to avoid a detrimental impact on the DSO programme.

It should be recognised that the timescales associated with the clearance programme are tied directly to the development of the new spectrum plan and expectations that this shall be co-ordinated by the end to 2009 may be highly optimistic.

Fundamental issues relating to requirements and intentions of our neighbouring countries are yet to be discussed and agreed. Until such time that the scope of the requirements may be appreciated in their entirety, the development of plans and the development of cost models will be inevitably delayed.

The key to bringing forward the clearance of this spectrum is likely to be close working between Ofcom, Arqiva and Digital UK combined with early certainty on funding and replacement spectrum for PMSE. But given the complexity and interdependencies, there must be considerable doubt whether full *UK-wide* 800 MHz availability could be achieved in early 2014 as suggested.

Transition of PMSE use from Channel 69 would probably be best addressed by agreeing a clearance plan with the key players in this industry including ensuring that an appropriate level of compensation (or direct replacement of equipment under a "scrappage" scheme) is made available. Earliest certainty on funding/scrappage and replacement spectrum will assist early transition of PMSE.

Question 5. Do you agree that a programme-control and -governance arrangement such as that outlined above is appropriate?

Arqiva agrees that given the complexity of the project, and the risk of consequential impact on the high profile public policy infrastructure project which is DSO, it is essential that clearing Channels 61 – 69 have sufficiently resourced project management with clear lines of accountability.

We note the appointment of Deloitte for programme management. But we are concerned that there is potential for this additional layer of programme management to overlap with the existing responsibilities of Arqiva and Digital-UK.

The DSO programme has been technically complex from the outset and, due to the gradual refinement of the frequency plan and coverage optimisation, changes are being introduced continuously which need to be analysed technically and managed commercially.

In addition to these detailed changes to the DSO specification the scope of the project is likely to be broadened in the very near future to incorporate HDTV, and the clearance of Channels 61 and 62 will introduce a further increase in scope.

Since at its centre there is one high power DTT network which has to be maintained operationally and commercially, it is extremely important that there is a clear management hierarchy through which all issues, however arising, will be processed and implemented. Arqiva is keen to work with Ofcom and Digital UK to establish and develop the future management structure.

The illustrated programme structure appears to cover all of the specific subject areas. However programme management cannot operate in isolation from agreeing and securing funding obligations. There can be no certainty as to the programme structure or timescales until there is certainty on funding.

In addition, it is likely that some members of the steering group and workstreams will also be committed to the planning and implementation of DSO and/or the DVB-T2/Freeview HD project.

Question 6. Do you agree that the four cost categories adequately capture the costs associated with clearing DTT from channels 61 and 62? Are there any costs that do not appear to have been accounted for in any of these categories?

The four cost categories would appear to encompass all of the likely costs incremental to planned DSO expenditure. However at this stage it is hard to comment on the proposed range of costs as these are so dependent upon the scope of work and additional infrastructure required, which cannot be determined for some time. In turn, this would suggest that securing the necessary funding commitment(s) may take a while.

Question 7. Do you agree that our cost profile is a reasonable basis for planning the capital expenditure for clearing DTT from channels 61 and 62?

Arqiva believes that the cost profiles for spectrum planning and communications seem reasonable. However the cost profile for infrastructure re-engineering seems somewhat optimistic on when orders could realistically be placed for transmitter equipment as this is dependent upon a revised frequency plan (which will call upon resources already allocated to DSO) and the outcome of international co-ordination.

It should be noted that the region by region RBL analysis will have to be repeated, which shall be time consuming and may in turn lead to additional infrastructure costs as sites may need RBL antenna upgrades, re-transmitter upgrades or line feeds that were not required for the original DSO baseline.

It is likely therefore that infrastructure re-engineering costs will continue into 2014. For both this reason and a likely need for communications to also extend into 2014, programme management costs are unlikely to cease in 2013 as proposed.

We note that Ofcom expects to have a clearer view on infrastructure costs by spring 2009 but, due to the complexities of this initiative and the work that is yet to take place, this may prove optimistic.

Moving PMSE from channel 69

Question 8. Do you agree that these are the most appropriate criteria to assess which spectrum is the best alternative to channel 69 for PMSE?

The replacement spectrum for Channel 69 should also offer users 8 MHz UK-wide, adjacent to interleaved spectrum, and be no more subject to incoming interference.

If significant disruption and cost (including the potential for purchasing replacement equipment twice) is to be avoided there should be early certainty, both for users and manufacturers, of the replacement for Channel 69 and the likely timing of the withdrawal of 69 from the PMSE band manager (including whether withdrawal is to be by region).

Question 9. Do you agree with our technical and coverage analysis of the possible alternatives to channel 69 for PMSE?

Arqiva does not believe that interleaved spectrum alone (where the exact amount to be made available cannot be known for some time) would offer a satisfactory replacement for Channels 67 - 69 as there can be no guarantee that any specific contiguous block of 24 MHz would be able to offer users a minimum of 8 MHz everywhere in the UK - a key user requirement.

Arqiva agrees that Channel 38, which is already utilised by PMSE, has many attractions given that no high-power alternative use would be precluded and it would also offer users adjacent interleaved spectrum in Channels 39 and 40. Although Channel 38 would only become available UK-wide for PMSE use from 2012, after radioastronomy vacated the spectrum, given its limited use by radioastronomy there may be potential for PMSE to make greater use of this spectrum pre-2012.

While we agree that it is too early to be certain that PMSE could practically use the FDD duplex split[4], it is hard to detect any interest in Channels 61 – 69 beyond those wishing to deploy FDD LTE and Arqiva believes that the balance of advantage lies in Ofcom simplifying the auction design (as well as potentially bringing it forward) by specifying SURs for FDD LTE.

This would ensure that, should the output of the CEPT technical work be positive for PMSE use of the FDD duplex split, Ofcom could take an early decision which UK

[4] There will be a fixed frequency spacing between an uplink channel and its corresponding downlink channel, within which would be a guard block separating the entire uplink block from the downlink block. Some of that guard block could be made available to low power uses such as PMSE (with the potential advantage that the same spectrum could be made available across Europe).

manufacturers could ultimately exploit across Europe. However the FDD duplex split would not, on its own, replace Channels 67 – 69 and we see this additional spectrum which could be made available to the PMSE band manager.

Arqiva agrees that "Channel 70", 872 MHz and 1785 MHz would not offer suitable replacements spectrum for PMSE.

Question 10. Do you agree with our economic assessment of the realistic alternatives to channel 69 for PMSE?

Arqiva agrees that, in determining the opportunity cost for Channel 38, DVB-T use in Wales and Northern Ireland should provide the reference point. However the AIP determined for the PMSE band manager should ideally be phased in (not least because there are existing users in Channel 38).

Given the lack of suitability of interleaved spectrum only, Arqiva isn't commenting on that proposed level of AIP.

Question 11. Do you agree that channel 38 is the best alternative to channel 69 for PMSE?

Yes, but additional use of the FDD duplex split should not be discounted.

Question 12. Do you agree that we should award channel 38 to the band manager on the same terms as would have applied to channel 69?

Yes, the PMSE band manager should be awarded Channel 38 UK-wide, ideally with a period of "dual running" where both Channels 38 and 69 were available to smooth migration.

Digital dividend: clearing the 800 MHz band

Question 13. Do you agree with our proposal to maintain PMSE access to channel 36 on 12 months' notice to cease and to the rest of the cleared spectrum (channels 31-35, 37 and 61-69) until DSO is completed in the UK in late 2012?

Arqiva believes that 12 months' notice to clear Channel 36 is sensible, likewise maintaining PMSE access to the rest of the lower cleared block.

Question 14. Do you agree with our approach to determining eligibility for, and our assessment of the level of, funding to move PMSE from channel 69?

Arqiva understands why Ofcom's proposal is that only established licensed PMSE users should be compensated and that the level of compensation should take account of the residual equivalent value of existing equipment.

However PMSE's diverse user base is crucial to UK creative industries; (where much PMSE equipment is deployed by freelancers and small firms). This user base also encompasses charities, schools, and other groups which probably do not have access to funding for change. Finding a way to alleviate their transition too could help considerably to clearing this spectrum.

Contrasting this with the significant value to UK plc which would be generated by early transition of PMSE to alternative spectrum; this may be a case where compensation should be generous rather than niggardly.

In addition, and accepting Ofcom's desire not to set a precedent, it has to be recognised that there are legitimate reasons why many PMSE users of this spectrum were unlicensed at the proposed reckoning date.

PMSE users and their trade bodies are likely to be far more willing to agree to a rapid transition (once the replacement spectrum has been confirmed) if compensation which errs on the generous is made available. A scrappage scheme which replaces 800 MHz equipment with new equipment operating in the replacement spectrum identified would achieve the fastest and cleanest result.

Even the £30 million cost estimated by Ofcom for replacement of <u>all</u> 58,000 wireless microphones is so small by comparison to the benefits of facilitating early clearance that Arqiva believes that this should be seriously considered as an option, it being likely that incoming 800 MHz licensees would, between them, find that sum a price worth paying to secure earliest availability of this spectrum.

Whatever scheme is put in place, its management may be more efficiently and sensitively achieved by the PMSE band manager rather than by Deloitte.

Question 15. Do you agree that three years is long enough for PMSE to move from channel 69?

Arqiva believes that only JFMG could be in a position to give an informed view of this proposal.

Impact assessment

Question 16. Do you agree that with our analysis of the key impacts of our policy options? Are there any other key impacts we should assess?

As noted previously, Arqiva believes that there is considerable scope for slippage in the proposed timetable.