

**BT Response to the DTI and DCMS Consultation on
Digital Television: The Principles for Spectrum Planning**

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Executive Summary

1. BT welcomes the opportunity to participate in the consultation by the Department of Trade and Industry (DTI) and The Department for Culture, Media and Sport (DCMS) on the underlying principles for the re-planning of the UHF TV Broadcast Spectrum.
2. We believe that the excellent coverage potential and low technology costs associated with the 470-862MHz band should be harnessed to bring complementary digital broadcasting and interactive broadband services at affordable prices to as many people as possible.
3. We do not believe that the digital broadcast spectrum requirements in the band can be considered in isolation from the requirements of new services that might be launched in the released spectrum.
4. BT believes that an holistic review of the options for delivering digital broadcasting and other broadband content services needs to be completed before key decisions are taken. This should take account of the market's requirements for the different services and applications envisaged, the need for affordability, the current trends towards economics-based spectrum management regimes, and the strengths, weaknesses and synergies of all the delivery platform options.
5. The discussion in the consultation document is primarily focussed on the roles of terrestrial and satellite broadcasting and cable. BT considers that the important fourth delivery platform, i.e. the broadband telecommunications platform, must feature prominently in the debate, as it will be a significant factor in broadband delivery well before analogue switch-off.
6. BT supports the Recommendations of the Spectrum Review that suggest that broadcast spectrum should be priced in relation to the opportunity cost, and that an initial value of the broadcast spectrum should be determined and made visible in the public domain. This value will be an important factor in determining the balance of retained and released spectrum.
7. We support the idea that economic tools could also be used to encourage the take up of digital TV. This would facilitate the early release of spectrum.
8. **We do not believe that spectrum freed by analogue switch-off should be used to simply add capacity to the broadcast or mobile services. The licensing regime for the released spectrum should encourage innovative broadband access solutions.**
9. The spectrum released by the move to digital TV must be recovered by Government and licensed anew for new broadband applications. We do not believe that spectrum leasing or sharing arrangements with current broadcast

licensees, (options suggested by the Independent Spectrum Review), will yield the best overall social and economic benefits. However, such arrangements might be useful in facilitating transitional arrangements.

10. BT believes that the delivery of interactive broadband services (and probably digital TV) to mobile and portable terminals and devices must be an important consideration.
11. We also believe that the requirements for interactivity using in-band or other forms of return channel should be carefully studied as part of the overall review.
12. BT believes that any new frequency arrangements should not preclude the use of “cellular-like” planning arrangements that improve spectrum efficiency and facilitate local service areas. We believe that, within the bounds of national and international agreements, the spectrum users should be free to find the best planning approach.
13. We believe that the maximum benefit will be forthcoming if a significant tranche of spectrum (e.g. at least 20 x 8MHz channels) is released for a wide range of innovative interactive broadband applications.
14. Further technical and commercial studies need to be completed, and the new regulatory framework needs to be clarified, before the most appropriate channels to be released can be identified.
15. We suggest that whatever solution is finally adopted, it must provide sufficient flexibility to cope with the uncertainties of the broadband and broadcast markets.

Contents

EXECUTIVE SUMMARY	1
CONTENTS	4
1 INTRODUCTION.....	5
2 BT'S OVERALL POSITION.....	5
3 KEY ISSUES	7
3.1 THE CONSULTATION APPROACH	7
3.2 BROADCAST/BROADBAND PLATFORMS AND CONVERGENCE.....	8
3.3 IMPACT OF SPECTRUM ECONOMICS AND THE <i>INDEPENDENT SPECTRUM REVIEW</i>	10
3.4 RELEASING BROADCAST SPECTRUM	12
3.5 OPPORTUNITY AND UNCERTAINTY	13
3.6 MARKET DIFFERENTIATION AND SCOPE FOR INNOVATION.....	14
4 SPECTRUM PLANNING.....	16
4.1 HOW MUCH SPECTRUM SHOULD BE RELEASED?	16
4.2 WHICH CHANNELS SHOULD BE RELEASED?	16
5 CONCLUSIONS	16

1 Introduction

BT welcomes the opportunity to participate in the consultation by the Department of Trade and Industry (DTI) and The Department for Culture, Media and Sport (DCMS) on the underlying principles for the re-planning of the UHF TV Broadcast Spectrum (470-862MHz) to accommodate digital TV and other new broadband services.

BT is particularly interested in the possibilities for new broadband applications that could exist alongside broadcasting in spectrum released by the move to digital television. The key message of our response is therefore to encourage a solution that provides for a high quality digital TV environment whilst releasing the maximum amount of spectrum in a frequency band that is particularly well suited to the further development of *Broadband Britain*. BT is not yet in a position to comment on the technical detail of how such services might be planned. However, we do offer our views on general principles that we believe government will need to address at this stage if the best overall social and economic benefits are to be derived from this important part of the spectrum. We will continue to explore the underlying technical ideas that could achieve these goals.

BT appreciates that the under-pinning philosophy for the future UK use of this band will need to be developed soon to allow the UK to prepare for the development of new international broadcast planning agreements. BT therefore intends to participate in the debate at both national and international levels as we move towards the 2004 and 2005 re-planning conferences.

In §2 of this response, we set out our current overall position. In §3 we address a number of issues that we believe Government must consider in developing its principles for the re-planning of the relevant spectrum (470-862MHz). In §4 we comment on certain spectrum issues but, for reasons explained below, we believe further studies must be completed before there can be certainty as to which specific channels should be released. In §5 we offer some preliminary conclusions.

In various places in the text below we refer to specific paragraphs in the Consultation Document and the Report of the Independent Spectrum Review¹ using the notation (c.d. §a.b) and (s.r. §x.y) respectively.

2 BT's overall position

The excellent coverage potential and low technology costs associated with the UHF TV band drive BT's general position on the re-planning of these frequencies. We believe these special attributes could, and should, be harnessed (as part of a multi-platform approach) to bring high quality digital broadcasting and entirely new interactive broadband services for entertainment, education, leisure, e-library, access to "Government on line" etc. at realistically affordable prices to as many people as possible. BT believes that any new arrangements for the 470-862 MHz frequency

¹ Prof. Martin Cave, *Review of Radio Spectrum Management*, DTI/HM Treasury, March 2002

band must proactively encourage the development of this complementary broadcast/broadband environment.

In our response² to the recent *Independent Spectrum Review*³ (The Review), we emphasised the need to maximise the overall envelope of social, economic and consumer benefits arising from the use of spectrum, rather than concentrating on any one of these. We believe this principle to be especially relevant to the UHF Television band. This spectrum has the unique ability to provide wide coverage using low cost technologies, and we believe significant overall benefits could result if it is re-used wisely.

We further believe that the maximum economic and social benefits will only be forthcoming if a significant amount of spectrum (i.e. at least 20 x 8MHz channels) is released for innovative applications that can take the UK a significant step forward in broadband delivery. We believe that such applications, delivered within local service areas, and offering locally focussed services (as envisaged in c.d. §4.2), content and advertising etc, to both fixed and mobile/portable terminals, will complement the national and regional digital broadcasting environment. BT considers the mobile/portable aspect to be particularly important, and we return to this topic in §3.6 below.

Our preliminary “vision” may be better suited to the *more “cellular” approach to planning* mentioned in c.d. §1.9 (however, we believe the use of this particular terminology could create confusion with cellular mobile telecommunications systems). Whether or not this is practical for digital TV networks remains to be seen, but it is worthy of consideration for new applications at least. We believe that any strategy for re-planning must not preclude such options. We fully recognise that this approach would impact on the number of stations required, and we believe significant further work is needed to determine how new networks could be realised in a way that is cost effective, spectrally efficient and socially and economically beneficial. We believe our view to be in line with concepts explored within the consultation document (c.d. §2.9 and §2.10). We therefore believe that, within the overall framework of national regulation and international agreements, the spectrum users should be free to find the most effective planning approach to delivering their services and applications.

If the maximum opportunity for new services is to be achieved, we do not believe that the re-planning of this spectrum can be considered in isolation. We are convinced that the review of its future use should be undertaken with full cognisance of the other terrestrial and satellite developments that are associated with the delivery of broadcast programming and interactive broadband multimedia services.

² BT’s Response to the Independent Radio Spectrum Management Review, August 2001

³ Radio Spectrum Management Review: a consultation paper, DTI/HM Treasury, June 2001

We believe that it is only through an holistic approach, that recognises the progressive convergence of services and applications and explores the best overall framework within which the diversity and competition in delivery platforms can flourish, that the maximum overall societal and economic benefit can really be achieved. The goal must be to maximise popular access to digital broadband services of all kinds.

In addition to the above goals and the unique qualities of the spectrum in question, this review must take account of: -

- Different services and applications that people will actually want and be willing to pay for. These need to be explored via market feedback from existing digital offerings and practical trials of potential new applications and services;
- Key requirements for coverage and affordability for the mass market (to facilitate the widest possible take-up);
- Current trends towards economics-based spectrum management (as explored by the Independent Spectrum Review);
- Strengths, weaknesses and synergies of existing and likely future delivery platforms (to maximise coverage with best spectrum utilisation) and,
- The requirement for healthy and sustainable competition.

BT believes that this broad strategic review will reveal what the most deserving future uses and frequency arrangements for the UHF band might be. It must be therefore completed before major decisions are made as to the future of the band. We believe that there is time available for government to take this broad approach, which is fully justified by the importance of the topic.

We believe these views to be in line with Government intentions expressed in the consultation document (c.d. §1.6).

3 Key issues

3.1 The consultation approach

In the context of the requirement for an holistic approach, as discussed above, we are concerned that the scope of the present consultation may not lead to the best results for the UK. In particular: -

- i) The current consultation document deals with the needs of broadcasting and its market, and it suggests a separate, later, debate on new applications that might be developed in any released spectrum. The consultation does not therefore address how the digital broadcast services and new applications and services that might come into any released spectrum would exist in juxtaposition. This creates a difficulty, in that many of the underlying economic, commercial and engineering principles for re-planning can only be determined if there is a reasonable understanding of the future markets (and indeed technical options) for both broadcasting and other interactive broadband delivery. We do not believe these issues can be dealt with sequentially as suggested.

- ii) **The consultation addresses broadcasting, as it is understood today, and (in our opinion) does not sufficiently engage in the implications of convergence (of broadcasting, the Internet, telecommunications and information technology). Convergence, if handled well, should make the competitive multi-platform broadcast/broadband environment far more productive, exciting, and seamless for the end-user. It will undoubtedly become a commercial and regulatory reality within the period before the switch-off of analogue TV, and it must therefore be an important consideration in this current debate.**
- iii) We believe the whole issue of spectrum economics needs to feature more prominently in the discussions, even at this early stage. Our position is that broadcasting should sit alongside other major spectrum uses in compensating for spectrum usage in relation to opportunity cost. This could impact significantly on the balance of spectrum retention for broadcasting and spectrum availability for new services, and the way future digital networks are engineered. We were pleased to see that the Spectrum Review Report offered a range of ideas for further consideration.

3.2 Broadcast/Broadband platforms and convergence

The consultation document focuses on the roles of the three traditional platforms in delivering future broadcast content, viz.: -

- The digital terrestrial broadcast networks;
- The digital satellite broadcast services; and
- Digital services over cable TV networks.

However, the timing of the changes to come (2006-2010) will take us well into the era of convergence (in whatever form this eventually emerges). Broadcasting and other broadband services will by then have closer relationships and many commonalities.

BT therefore considers that the important fourth platform, i.e. the broadband telecommunications platform, including its “tetherless” periphery (WLANs, home networks etc.) must feature prominently in the discussion. We believe this to be an important omission given the time scales of the changes envisaged. Whilst the role of DSL is acknowledged in c.d. §1.11, this is not really followed up in the general discussion. Indeed, the consultation document (c.d. §1.12) indicates *Government’s commitment to enabling competition on 3 digital television platforms*. We believe the fourth platform must be included in the debate if full benefit is to be drawn from the potential of *xDSL* and *Broadband Fixed Wireless Access* etc. Within a balanced overall UK strategy these access technologies could be a significant factor in broadband delivery well before analogue TV is switched off.

Furthermore, the Review Report also discusses the potential for digital radio (T-DAB) also to deliver non-broadcasting data services. The Review suggests (s.r. §11.53) that the 23 x 1.5MHz blocks of spectrum identified for digital radio should be available for non-broadcasting applications as well. BT does not yet have a particular view on this, but we recall that at the 9th CEPT Radio conference in Lisbon in 2001 representatives of the broadcast community made two presentations^{4,5} that strongly promoted the “alternative uses” of the T-DAB technology for innovative applications, particularly as broadband delivery enhancements/alternatives to UMTS etc. If Government is at all minded to adopt the Review’s Recommendation in this respect then the T-DAB platform should also feature in the “holistic” review discussed above.

BT also notes that S-DAB services are becoming available around the world and some satellite industry players also see this as a mechanism for providing multi-cast and uni-cast data capabilities. This might also need some consideration in a comprehensive strategic review. Furthermore, a UK “industry” viewpoint⁶ developed recently during discussions with RA in the fixed link context identified the issue of what should happen when the analogue satellite broadcasting in 11GHz is finally switched off.

We are already seeing the major manufacturers developing multi-platform terminals with multiple air interfaces for digital broadcasting, cellular mobile and wireless LAN (including hot spot IP access and home networking applications). Some are highly portable, some less so, being more akin to advanced set top boxes. Some of the terminals have more than one interface to enable connection to different devices, including TVs and PCs (e.g. TiVO Series 2), plus some others also have an embedded modem for supporting a simple dialup return channel for interactive applications.

Within the timeframe envisaged for the re-planning of the broadcast bands such terminals will become the catalyst for the realisation of the convergence concept and its acceptance (and, undoubtedly, adaptation) by the market. Such devices, tailored to many different market sectors, will offer wholly new user experiences and lifestyle opportunities, not fully understood today, that provide personal access to services for communications, learning, leisure, interaction with government and the fulfilment of social and family responsibilities. It is therefore of the utmost importance that such facilities are enabled at acceptable prices to the greatest possible number of people. As already emphasised, the UHF band has an important role to play in this.

BT believes that if the requirements for broadcasting and other digital information services are analysed in conjunction with the main delivery options discussed above, then the elements most deserving of access to the re-organised UHF TV spectrum will become clear.

⁴ Phil Laven, *Digital broadcasting here and now*, 9th CEPT Radio Conference, Lisbon, October 2000

⁵ Quentin Howard, *T-DAB in operation – a commercial prospect*, 9th CEPT Radio Conference, Lisbon, October 2000

⁶ *Final Report on FMAC activities*, RA Fixed Link Consultative Committee, September 2001.

3.3 Impact of spectrum economics and the *Independent Spectrum Review*

The Independent Spectrum Review has been considering the application of economic principles to spectrum management in order to explore the potential for a market-driven spectrum management environment for the UK. The options as to how the UHF TV spectrum might be re-planned (and particularly which specific channels should be released) depend significantly on what may emerge in a future UK spectrum management regime. Such an environment would be very different from the current centrally managed regime, and could include rationalised regulation (for convergence), spectrum pricing related to opportunity cost and the principles and constraints of any spectrum secondary trading market (including the possibility of change of use). Based on the evidence of the published responses to the Review's public consultation, the range of opinion relating to the shape of a future UK spectrum management regime is extremely broad indeed.

Clearly the technical reality will constrain the range of possibilities, but the unavoidable technical constraints can be readily identified. Nevertheless, it is still very difficult for prospective new players to form an opinion on the principles that should underpin re-planning of the UHF TV band without some knowledge of where the spectrum and regulatory boundaries of the playing field will actually lie.

A related problem faces the incumbent broadcasting community, which will need to know how policy and spectrum pricing will affect future spectrum planning options. We therefore agree that the broadcasters must know what spectrum they will be permitted to use after switchover (c.d. §1.4), and that they need to be sure of the ongoing stability of this spectrum. In the context of guaranteeing sufficient broadcasting spectrum (c.d. §1.3) we agree that appropriate safeguards are probably needed, but the nature of any guarantees should result from the overall review as to how broadcast content is best delivered (and hence the amount of UHF spectrum to be retained), rather than being an input to this critical debate.

BT has now had the opportunity to consider the comprehensive report published by the Review. We had hoped to find within that document clear indicators as to how the future might develop. However, the Report makes visible the breadth and complexity of the issues and offers an interesting range of possibilities that will need to be explored further.

In the broadcasting context the Review argues (s.r. §11.8) that, by the setting up of Ofcom, Government has effectively acknowledged an unsustainable situation wherein broadcasting is somewhat insulated from the overall communications market. The Review further suggests (and we agree) that this logic should be extended to address the management of the broadcasting spectrum. Furthermore, we agree with the philosophy (e.g. as expressed in s.r. §11.66 and s.r. Recommendation 11.7) that broadcasting policy should be detached from the management of the spectrum that broadcasting might require. This drives our views on the release of spectrum as discussed further in §3.4 below.

The Review promotes spectrum pricing as an important tool in exposing the broadcasting community to the full impact of communications market forces. BT is in full agreement with the view that all spectrum users should be exposed to the opportunity cost of the spectrum they use. We remain convinced that, if this principle were to be applied in the broadcast band context, it would encourage a detailed examination of the trade-offs between spectrum prices, alternative platforms and spectrum efficiency enhancements. To this end we therefore support the idea (Review Recommendation 11.3) that the broadcast spectrum should be valued, with the value being made visible in the public domain. This value would be an important initial input into the discussion on the minimum amount of UHF spectrum that needs to be retained for conventional digital broadcasting and hence how much would be available for new broadband delivery applications.

We believe that the potential economic benefits that could be derived from released UHF spectrum are such that all the options for change should be carefully examined before decisions are made. BT has not yet undertaken its own studies to determine what could actually be achieved, but this is an area where we hope to make an active contribution in the future.

We are interested by the suggestion in the consultation document (c.d. §2.9-§2.10), that alternative deployment scenarios could significantly enhance the efficiency with which the broadcast spectrum is used. Such scenarios can include, for example, “cellular” layouts and/or single frequency networks. Chapter 11 of the Review Report also embraces a similar theme of there being significant potential for greater spectrum efficiency in broadcasting. We believe this to be a key issue, because of the potential for many new opportunities to be created if sufficient spectrum is released.

We fully appreciate that the cost implications of rearranging the broadcasting infrastructure, and the consequential impacts on the end-users, are clearly important factors that might argue against such radical change. However, we believe that, under the right economics-based spectrum management regime, very different incentives may come into play and different scenarios could cost in favourably. It could also be argued that if mobile/portable receivers/terminals are to be properly served (and we have already indicated that we attach importance to this), changes in broadcast station deployment might anyway be advantageous and/or necessary.

Whilst primarily advocating a change to digital transmission and strong economic measures as the best drivers for encouraging broadcast spectrum efficiency, the Review also identified other delivery platforms that should be considered as alternatives to the use of UHF spectrum. The Report suggests (s.r. §11.7) that these other platforms (satellite, cable and terrestrial broadcasting at higher frequencies) could, in some circumstances, be more efficient. However, it correctly recognises their weaknesses in the context of delivery to mobile/portable terminals. BT sees these statements by the Review as further confirmation that an holistic analysis of future broadband/broadcasting delivery options is the best way forward. We were pleased to note this by way of support for our own conclusions.

3.4 Releasing broadcast spectrum

The markets for broadband applications that could make very effective use of ex-broadcast UHF spectrum exist now. We therefore agree with, and support, the suggestions in the Review Report (s.r. §11.42-11.44) that economic tools and mechanisms should be used to encourage forward the take up of digital TV. This would benefit the viewers and provide an early harvest of the additional economic and social benefits yielded by new applications appearing in the released spectrum.

The Independent Spectrum Review Report suggests at least four ways in which spectrum could be released for other non-broadcasting applications: -

- ❑ Release by the broadcasters, with subsequent licensing to new operators (including via overlay auctions);
- ❑ Leasing of spectrum by the broadcasters to other operators, with the broadcasters retaining responsibility for compliance with licence conditions etc.;
- ❑ Sharing spectrum with other users (leasing multiplex capacity, including on a time of day basis), with the broadcasters again retaining overall responsibility;
- ❑ Use by the broadcasters for new, non-broadcasting, applications.

All four options have the potential to provide spare spectrum for innovative services, different from those associated with conventional broadcasting.

It will be particularly important for prospective new players to understand whether the first option (licensing to new players) or some form of retained control by the incumbent broadcasting licensees (or some combination of these two) will form the basis of the new broadcast bands regime. BT suspects that these alternatives could offer very different commercial and competition possibilities, and we have a preference for the first option as it provides the greatest flexibility and scope for enterprise.

The consultation document for this present consultation appears to emphasise the first option, i.e. the release of spectrum for auction for new applications, and BT believes that this is probably the solution most likely to maximise the overall social/economic benefit. We do not see the “softer” options of sharing or leasing resulting in the same opportunity for radically new applications to be deployed in the band. However, we sense from the discussion within its Report (e.g. s.r. §11.20-§11.22) that the Review developed a preference for some kind of leasing or sharing solution (options 2 and 3 above), although no such preference is explicitly stated in the Recommendations. Indeed Recommendations 11.2 and 11.6 promote both auctions and leasing, and could arguably be seen as being in conflict in this important context.

BT therefore believes that Government might need to express a policy preference in this area in the light of the many options raised within the Review's findings, otherwise it will be quite hard to move the debate forwards. We believe such policy guidance would provide clarity and facilitate change at the earliest opportunity.

However, given that the full release of spectrum could not take place for some time, there may be some scope for employing one or more of the leasing/sharing ideas to support transitional solutions ahead of the final analogue switch-off. Further study is needed of the possibilities in this area. We note that the Spectrum Review also seems to find an early start via leasing to be an attractive possibility (s.r. §11.70).

3.5 Opportunity and uncertainty

The changes to the UHF broadcast spectrum that could take place in a few years time will need to endure for several generations. BT therefore believes that the transition to digital television requires full consideration of both the near term *and longer-term* needs of the UK's people for broadcast and interactive broadband services.

If the UK is to encourage the population as a whole towards a *digital life-style*, then a key principle of general affordability needs to be established at the outset. BT believes that the updating of the UHF TV band represents a unique opportunity to extend broadband content delivery services, at affordable prices, to a very large number of people across wide areas of the UK. We believe that there will be very few, if any, comparable opportunities within the foreseeable future.

We fully agree with the sentiment expressed within the consultation document (c.d. §1.3) that the best uses for this spectrum in 2006 and (especially) in the years beyond are impossible to predict with any certainty. In this context, BT is mindful of the Radiocommunications Agency's (RA's) *Future Mapping* initiative⁷ and we can identify with the results (e.g.⁸) that these studies have yielded so far. The underlying principles behind this work are the considerable uncertainty as to the relative attractiveness and viability of the different delivery platforms and applications in the market place of the future, and the consequential need for a flexible regime for spectrum management that can cater for this uncertainty. BT believes that the concepts of this Future Mapping initiative are especially relevant to the goals of DTI and DCMS in this present consultation. Indeed, recent events relating to the UK digital TV and cable companies have shown the difficulty in predicting how favourably and how quickly the market will respond to new broadcasting offerings, even over relatively short time scales.

Whatever decisions are eventually made about this spectrum, BT strongly believes that the plan must include mechanisms that allow for review and a good measure of flexibility for the future. This may be difficult to achieve for the "core" broadcasting

⁷ *A Scenario-Based Review of Spectrum Management Strategies in the Converged Era*, RA/Nervewire, May 2000.

⁸ *Report of a workshop held on 31 January - 1 February 2001*, RA/Nervewire

services (especially free-to-air public services), and the need for flexibility therefore represents a powerful argument for releasing a significant amount of spectrum for new and complementary (to traditional broadcasting) content delivery applications that can more readily adapt to future market requirements. In this way the customers can have both stability where it matters and choice and change where these are advantageous.

3.6 Market differentiation and scope for innovation

BT believes the release of spectrum must provide new opportunities for innovation in broadband delivery. The new spectrum arrangements must be such that these have a fair and reasonable opportunity to grow and prosper.

As a principle, we do not believe that the *spectrum dividend* arising from the transition to digital broadcasting should be used simply to extend the capacity of the existing broadcast networks (c.d. §4.4), or of the existing mobile services situated either side of the broadcast band (c.d. §4.8). Instead we believe this spectrum should be usable in ways that complement both traditional TV broadcast services and the personalised point-to-point services offered over the fixed and mobile networks. We also believe the new applications in released spectrum should serve new markets, and the degree to which content already available on the national or regional terrestrial and/or satellite digital broadcasting systems and the cable networks is duplicated needs to be a matter of commercial consideration rather than regulation.

The scale of service area that may be appropriate for such applications would have an important impact on the associated frequency planning.

The key role for the released spectrum might be in delivering exciting, engaging and useful broadband content to fixed, portable and mobile terminals in “local” service areas. BT believes that recognition of the importance of the mobile/portable market should be a fundamental principle underlying the re-planning of the spectrum. Purely as an illustrative example, we could imagine service areas akin to those of local FM broadcast stations, e.g. covering large towns and their immediate surroundings, or a significant rural area. In this way much of the content could be local, giving a community flavour, and there could be a greater opportunity for public interaction with local businesses, local events and local government services and decision-making, etc. These services, coupled with new types of multi-platform terminals (as discussed in §3.2 of this document) represent new market sectors and opportunities for technical and commercial innovation for which additional, thorough, market evaluation would be beneficial. Limited trialling of potential new services and applications might be an excellent way of testing of market reaction to entirely new concepts.

BT believes that careful consideration must be given to the requirements for interactive services.

It might generally be expected that any new digital services would be interactive, but for general TV broadcasting applications this has been questioned. We are aware that the results of some valuable market research⁹ recently commissioned by Oftel, on balance, indicated fairly negative opinions on interactive TV (“*There were mixed to lukewarm reactions to interactive services...*”) and a preference by users to keep the household use of the TV and the home PC separate. Furthermore, such services were “*generally seen as an interesting extra and were not part of the justification for, and value in, their digital subscription*”. Indeed the same research implied that for broadcasting a wider choice of channels and better sound and vision quality would be the priorities over interactivity. However, we know that the ultimate interactive engine, the Internet, is extremely popular when used in a PC environment. To BT this suggests that different “home markets” exist for traditional broadcast content and interactive multimedia applications. Our vision for the UHF band is therefore one in which both are catered for to best effect, rather than expecting digital TV *per se* to provide all things to all users. We believe the latter philosophy would be a significant mistake.

The different home markets are already becoming clearly visible as the television moves towards the rather static large flat-screen/surround sound “home cinema” viewing experience, whilst the PC transitions towards the highly portable tablet-style web browser, communications and information centre and electronic book. It is likely that fully interactive services are of more personal interest (and indeed, in the case of banking, shopping etc., private) to individual users, and do not lend themselves to display on the communal TV. They may also require a higher resolution screen to be comfortable to use if there is a greater degree of detail.

On the other hand, the provision of some broadband interactive services via a digital television ensures that all users (especially those without PC skills) have access to the basics of Broadband Britain on a digital TV at minimum cost. However, the Oftel Report suggests such users to be small in number.

Much depends on how the technology of the “TV terminal” moves forward within the envisaged time scale, i.e. whether the market embraces fully integrated (including portable) TV terminals providing access to different services or the set top box (STB) approach that is independent of the users interface device (TV or PC etc.). Market preference will decide, and may change, so future flexibility is essential.

As a related consideration, BT believes it to be important to consider the potential for in-band return channels for new interactive broadband services. Such arrangements ensure available and consistent bi-directional coverage, whereas a return channel over fixed or mobile telecommunications networks can lead to cost and/or mutual coverage implications.

⁹ *Digital Television – Consumers’ Use and Perceptions. A report on a research study.* Prepared for Oftel by Counterpoint Research, August 2001

4 Spectrum planning

4.1 How much spectrum should be released?

There is a limited amount of spectrum within which to deliver both choice and competition, and a balance needs to be struck between how much is retained for broadcasting, and how much is released for the entirely new broadband applications. This complex problem must be addressed in the context of the holistic review discussed earlier. BT believes that the release of too little spectrum could create an artificial shortage for new services and hence spectrum costs could prevent the benefits of new applications and services reaching a large percentage of the population. The goal must be to release sufficient spectrum to ensure an affordable competitive environment for these new applications.

From all the above comments it is clear that BT believes that the release of the maximum amount of spectrum possible (commensurate with Government's policy objectives for broadcasting) for new applications and services will offer the best overall economic and social benefit. The consultation document discusses options of releasing from 12 to 20 of the 8MHz channels. We believe that the potential economic and social benefits strongly encourage consideration of the top end of this range, or more if possible.

4.2 Which channels should be released?

Further technical and commercial studies need to be completed, and more will need to be known about the likely regulatory regime, before the specific channels that should be released can be identified. Much will depend on the types of new applications that might be allowed, the requirements for return channels for interactive services (or for other forms of paired spectrum) and, as already noted, the spectrum management regime (including any provisions for spectrum trading) that might be in place by 2006-2010.

However, if new applications are to exist in channels close to those of high power broadcasting applications the issue of guard bands to ensure mutual compatibility may arise. In this context it makes sense to realise the released spectrum as one contiguous block (or perhaps two blocks) rather than have channels fragmented through the band.

5 Conclusions

BT fully recognises the importance of the opportunity represented by the forthcoming analogue TV switch-off. It is our view that new frequency arrangements should be devised that offer excellent digital TV services and real possibilities to extend the coverage of Broadband Britain to a significantly greater area of the UK.

We are convinced that the transition to digital TV provides a unique opportunity to extend the variety of broadband services available to the market, and that special efforts need to be made to release sufficient spectrum for this to happen within an affordable, competitive, environment.

The solution finally adopted should be that which achieves greatest overall social and economic benefit for the UK. To this end we believe that the following principles must be considered within the UK's approach to the re-planning of UK digital TV broadcasting and the 470-862MHz frequency band: -

1. Every effort should be made to find a re-planning solution that allows both digital TV broadcasting and innovative interactive broadband applications to co-exist within the band with equitable opportunities to prosper.
2. A goal should be set to release at least 20 x 8MHz channels to allow a competitive environment for a wide range of new broadband applications to be developed. The consultation documents suggests that this should still allow the successful fulfilment of Government broadcasting policy and the delivery of high-quality national and regional TV.
3. Economic principles should be applied to the management of the UHF TV spectrum to bring broadcasting into line with other aspects of the communications market. These economic measures should be used to encourage planning approaches that have significantly increased spectrum efficiency, and to facilitate the take-up of digital TV to avoid slippage of the currently envisaged timescales.
4. The requirements for retained broadcast spectrum in the UHF TV band should be determined within a review of overall market requirements for both TV and other broadband delivery services, and all the various options for delivery (including the broadband telecommunications network and possibly digital audio broadcasting). This will achieve the correct balance of retained and released spectrum. We do not believe the issues of digital broadcasting and new applications can be handled sequentially.
5. Released spectrum should be recovered by Government, and should be licensed anew for innovative broadband applications that complement traditional broadcasting and telecommunications services.
6. Leasing/sharing arrangements might be useful in providing transitional arrangements prior to completion of the analogue switch-off.
7. The new frequency arrangements and associated regulation should not preclude the development of new applications that offer more local coverage areas, perhaps (but not necessarily) using a more "cellular-like" planning approach. Indeed we believe that operators should have flexibility to determine the most effective planning approach to serve their markets.

8. The key importance of delivery to portable/mobile terminals must be recognised. We believe that this should be a significant consideration in any new approach to planning.
 9. The requirements for interactivity, and how this can best be implemented, need to be carefully addressed. An assessment of the likely market requirements for interactivity in both the medium and longer terms is needed as the return channel question, especially if it is to be in-band, is a major factor in planning for the future.
 10. A critical success factor for any new plan for the 470-862MHz band will be its capacity to cope with changing market preferences and new technology developments. Flexibility is essential.
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