



Digital switchover of television and radio in the UK

Memorandum by Ofcom

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Section 1

Summary

Switchover, upgrade or migration?

- 1.1 The term “digital switchover” (or DSO) is now well understood in the context of digital television. The same term is used about digital radio in the Digital Economy Bill, but it is worth noting that the Government’s Digital Britain report referred to it as “Digital Upgrade”, and the process is also sometimes referred to as “digital migration”.
- 1.2 The reason that these alternative terms are sometimes used is that “switchover” in radio is different from television. Terrestrial television switchover requires the analogue signal to be turned off in order to achieve a full digital service. In radio, the government is proposing that the FM band will continue in use, but that coverage, take-up and the number and range of services on the DAB platform will increase, such that DAB becomes the primary radio platform. Analogue television is being switched off, analogue radio is not.

Television

- 1.3 The programme of digital switchover for television was announced by the government in September 2005. This announcement had been preceded by a number of years of detailed work by Government, Ofcom and industry carried out between 2000 and 2005.
- 1.4 The switchover programme commenced as planned in 2008 and is expected to complete on time in 2012.
- 1.5 Approximately five million households (20% of the UK) had completed the switch to all-digital television reception by the end of 2009.
- 1.6 Viewers that have switched to digital have in general experienced few difficulties. This has been aided by a high degree of digital-take-up prior to switchover occurring.
- 1.7 Issues that have emerged are mainly in relation to some digital equipment not being easy to use, the behaviour of some receivers in areas of signal overlap from different regions or nations and reception problems resulting from the poor condition of some viewers’ aerials.
- 1.8 Some viewers that are accustomed to the unchanging nature of analogue television may find new features difficult to use and be to new developments
- 1.9 The terrestrial television platform continues to evolve with the launch of High Definition services in some areas being a recent development in late 2009. Further developments are likely in the future. This increased pace of change presents challenges
 - for industry in adopting new technical standards whilst maintaining compatibility with older receivers
 - for viewers in keeping abreast of changes

Radio

- 1.10 Media consumption is changing, but linear audio still has unique characteristics, and our research suggests that broadcast radio still has a particular role to play.
- 1.11 At UK-wide and larger local levels, the commercial radio sector complements the BBC's radio services, but also has an important role providing competition, diversity of genres and plurality of voices, given the BBC's share of the radio audience. At smaller local levels, commercial and community radio makes a unique contribution of local content and community benefits not duplicated elsewhere.
- 1.12 For the past 50 years, the main way of listening to radio has been via analogue FM and AM services. There are currently 5 national BBC radio networks and 46 BBC local and nations' stations. There are also 3 national commercial networks and 300 local commercial services plus 160 community services broadcasting on AM or FM.
- 1.13 In 1995 the first DAB services were launched. DAB now carries all of the national analogue services plus a number of digital-only services from the BBC and commercial radio. It also carries most BBC local and nations' services and the vast majority of the large local commercial services. The small local services and community services tend to be available only on FM. Coverage of DAB is currently just under 90% and new transmitters are still being opened. The services which are already available on DAB account for over 95% of all radio listening (although most of the listening to those services is still on analogue).
- 1.14 A major issue for the radio industry is that the costs of transmitting on both analogue and DAB are high. The majority of listening is still to analogue but DAB offers benefits in terms of new opportunities for more stations, better reception and, particularly for national services, cheaper transmission costs. But for small stations, the costs of DAB transmission are prohibitive and the technology is not suited to individual local stations covering a bespoke local area. As a result, the operators of national and large local stations have been arguing for a switchover from analogue to DAB for their stations. Operators of smaller stations are worried about being left behind on analogue if most listening transfers to DAB, but recognise they could not afford to transfer to DAB themselves.
- 1.15 The Digital Britain report proposed a Government policy that DAB should be the primary distribution platform for UK-wide and large local radio stations, and called for a migration of listening to these stations to DAB over the next decade. This is facilitated by the provisions in the Digital Economy Bill currently before Parliament.
- 1.16 Under this plan, national services and large local services would cease to be available on FM and AM. They would be available via DAB and online with national services also available via digital TV. Small local stations would remain on FM. So listeners existing analogue-only FM and AM sets would not become obsolete but they may no longer be able to listen to their favourite station on FM or AM. The vast majority of DAB sets now being sold also include FM, so listeners with these sets will be able to listen to all the services available in their area, both DAB and FM.
- 1.17 Digital technologies offer consumers greater control, quality and - with very little spectrum available for new analogue radio services - potentially greater choice. DAB has had the largest impact to date in the UK radio market, with considerable take-up and usage, and industry investment in transmission infrastructure.

- Our analysis suggests that a number of digital platforms offering radio content are likely to develop, and to co-exist in a mixed ecology.
 - DAB is currently the technology best placed to provide free-to-access universal provision of digital radio services, across the country, via affordable portable and mobile devices. We therefore share Government's vision of DAB as the primary digital radio platform.
 - If this is to happen, regulation and legislation will need to change to facilitate the continued growth of the DAB platform.
- 1.18 More immediately, the industry faces significant financial pressures, resulting in part from structural and cyclical changes in advertising and in part from the costs of digital transmission.
- 1.19 The Digital Economy Bill provides legislation which would allow licensing and regulatory changes to help facilitate radio digital switchover. These provisions would allow Ofcom to:
- Extend and merge local multiplexes to improve viability and encourage multiplex operators to extend coverage
 - Agree to requests from analogue local stations to co-locate and share programmes within defined areas, so helping to improve viability and ensure the continuation of a viable tier of commercial services, large enough and sufficiently well resourced to provide local news and other content in every part of the UK. Stations of sufficient size to be viable on analogue should also be of an appropriate size for carriage on the relevant DAB multiplex/es, and would be of sufficient scale to afford DAB transmission; and
 - Give analogue stations that will migrate to digital-only transmission notice that their licence will be terminated at a certain date (on instruction from the Secretary of State)
- 1.20 At a level below these large stations, smaller stations would have a choice at digital switchover. They could
- stay on FM and keep to their current commercial model but with greater flexibility to co-locate and share more programming with other stations in their area; or
 - merge with other local commercial stations in the area, obtaining carriage on DAB to join the tier of large local stations.
- 1.21 At the point of digital switchover a significant amount of FM spectrum would be released. One use for this would be to allow for many more community-based stations, whose number is currently limited by spectrum availability, particularly in the major cities.
- 1.22 But the Digital Economy Bill and Ofcom's subsequent implementation of its provisions will not by themselves achieve digital switchover; action by industry stakeholders, both BBC and commercial will also be necessary, notably:
- improvement of coverage and reception – the funding of this needs to be agreed between Government, the BBC and the commercial radio industry;

- a more consistent offering of high quality content – one way of providing more high quality national stations may be to allow existing regional commercial stations to drop their regional programming commitments (except perhaps in the nations) to allow them to invest in becoming national stations (with national coverage on DAB and quasi-national coverage on FM until switchover);
- greater use of the other consumer benefits DAB can offer in terms of programme guides, text and data services;
- a significant investment in marketing by the industry, both BBC and commercial; and
- encouragement to car manufacturers to build-in DAB/FM receivers as standard.

Section 2

Progress towards television switchover

Ofcom's role

2.23 Ofcom has a number of duties and responsibilities relating to switchover in Television. The principal duties are:

- The licensing and regulation of broadcasters – Ofcom issued replacement licences for the main (commercial) public service channels ITV1, Channel 4, Five and Teletext (BBC1 and BBC2 are regulated by the BBC Trust) in 2004, in line with the requirements of the Communications Act 2003. These licences placed requirements on the broadcasters including back-stop dates for completing switchover in each ITV region, and for the broadcasters to communicate information on switchover to viewers. The bulk of viewer communications are conducted by Digital UK. The licences allow Ofcom flexibility to ensure that broadcaster obligations are met.
- Spectrum planning & international co-ordination - Ofcom has joint responsibility with the BBC for spectrum planning for the terrestrial TV network, and has responsibility for international coordination of spectrum allocations. While the bulk of this work has been completed for switchover, the Government decision to remove TV services from an additional two UHF channels at the top of the band (channels 61 and 62, see below) has led to additional spectrum planning and international coordination work that is now underway. A key part of Ofcom's work is to ensure that coverage of DTT after switchover substantially matches pre-switchover analogue coverage for the four main channels. Ofcom consulted on this in 2005, and placed specific coverage requirements in the broadcasters' licences.
- Research and Market information – Ofcom gathers and analyses data on the communications market, including figures for uptake of Digital TV in the UK. Ofcom also conducts technical and consumer research on aspects of TV as required. The planned work, scheduled to run from 2008 to 2012, is running to schedule and the work to date has been completed with no major problem

The regional switchover programme

2.24 The Government confirmed in September 2005 that analogue television services were to be switched off. The programme of switchover was to be carried out on a region-by-region basis commencing in 2008 and completing in 2012.



Source Digital UK

The original rationale for switchover remains valid

2.25 The Government decision to proceed with switchover was made in the light of

- The desirability of extending digital terrestrial TV coverage to virtually all of the UK. Around 27% of the population had no access to digital terrestrial TV prior to the start of switchover, and this was the subject of a large number of viewer enquiries and complaints. This extension of coverage is only possible after switching off the analogue services.
- The opportunity to release valuable spectrum for new uses for the benefit of consumers and industry
- The existing analogue TV system was conceived and designed more than 50 years ago and required updating

2.26 These remain the key drivers for switchover.

The four year digital switchover programme is on schedule

2.27 The planned switchover programme is running to schedule and the work to date has been completed with no major problems arising

2.28 Approximately 5 million homes (around 20% of the UK population) have completed switchover by end 2009. High power digital TV transmissions have completely replaced analogue television transmissions which have now been switched off in the Borders, West Country, and Granada regions as well as parts of Wales.

2.29 The success so far raises the question as to whether the switchover could be completed more quickly. Ofcom believes that the original four year programme is the right approach for the UK. The measured rollout of digital allows for necessary upgrading of the transmission network. Countries that have adopted faster switchover programmes, such as the USA, typically have less reliance on terrestrial TV and less comprehensive population coverage.

The switchover process appears to have worked well so far

2.30 A number of aspects of the switchover plan have worked well so far:

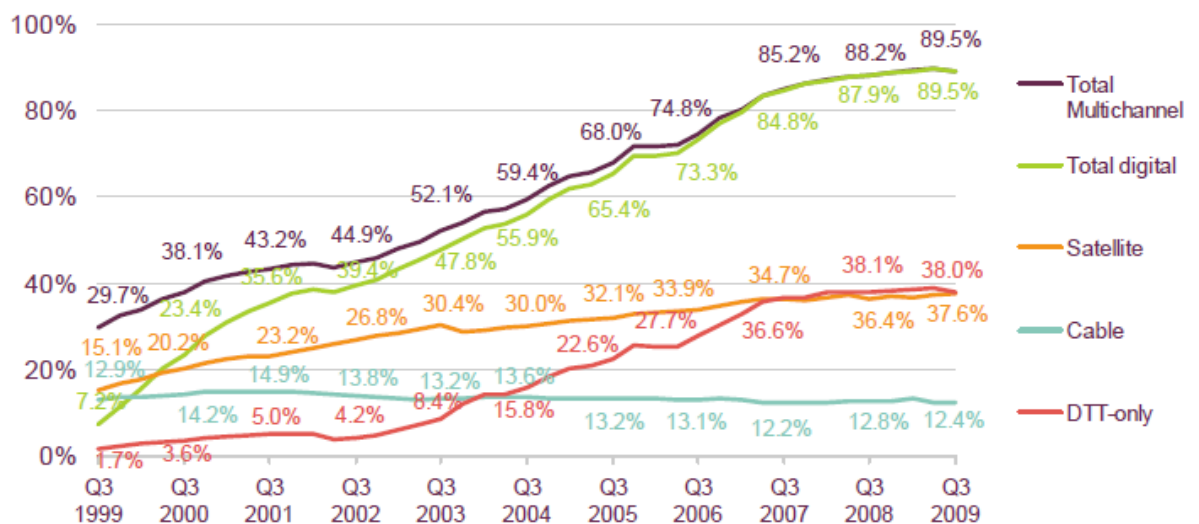
- A number of pilot projects, starting with “Go Digital” in 2001, fed results in to planning for switchover. The joint government/industry Digital TV Project that ran from 2000 to 2003, provided a basis for planning, specification development and industry engagement.
- Ofcom envisaged, in its report to the Secretary of State in 2004, a single body for delivering switchover. Digital UK was created to manage the switchover process and provide consumer and other communications, and this has worked well.
- Continued consumer oriented research through the early stages of regional switchover has provided useful feedback and allowed refinement of the process, such as minor changes to consumer communications.

The consumer experience of switchover has been broadly positive

2.31 Consumer research shows that for most people switchover is a neutral or positive experience, with those switching to digital for the first time likely to cite the availability of more channels as a positive benefit.

2.32 Many households voluntarily made the switch to digital television ahead of the switchover date. Although only 73% of homes were able to receive terrestrial digital services¹ when switchover commenced late in 2008, 88%² of households were already receiving digital television services on their main sets at that time. For secondary sets the figure was 60%.

TV Households (% take-up)



Source GfK and Ofcom Q3 2009

¹ In addition, it is estimated that digital satellite television services are available to 98% of households and cable television passes 50% of homes.

² Ofcom Communication Market Report: Digital Progress Report, Digital TV, Q4 2008

- 2.33 A small but significant minority of viewers experience some disruption or difficulty in getting properly switched to digital. Current joint research by Ofcom and Digital UK is looking at those worst affected with a view to improving communications to assist these groups, and to assess the extent of the problem. The indications so far are that most of the problems encountered are with equipment that is difficult to operate correctly, or with poor quality household aerial installations. Recent Ofcom research showed that around five to ten percent of houses in pre-switchover areas have household aerials that are inadequate for post switchover digital reception.
- 2.34 A particular problem with receiver equipment is that a minority of receivers incorrectly tune to unwanted services or weaker signals when signals are detected from more than one transmitter. This might result in viewers getting services from a different region or UK nation to those expected, with manual intervention required to get the desired services. The specifications and testing regime for digital receivers has been tightened as a result and it is expected that future receivers will be easier to operate in this respect.

The differential coverage between public service and purely commercial services has raised some consumer concerns

- 2.35 Digital TV services are transmitted in bundles known as multiplexes. A multiplex typically carries five to nine TV services and radio/text services. Three of the multiplexes carry public service channels and need to meet stringent coverage requirements that in practice mean that these three digital terrestrial multiplexes reach 98.5% of the UK population after switchover.
- 2.36 Three further multiplexes (two operated by Arqiva and one by SDN) provide purely commercial services. It has been a long standing policy (confirmed by the Ofcom consultation on coverage requirements in 2005) that these commercial services do not have to meet such stringent (and costly) coverage requirements. However, Ofcom did stipulate that they could not reduce their coverage compared with pre-switchover levels. These multiplexes will also operate at higher powers after switchover and under current plans their coverage will increase to around 90% of households, a significant increase from 73% before switchover.
- 2.37 Some viewers that are not covered by the additional, commercial, multiplexes feel that they are treated unfairly in that they do not receive the full range of digital terrestrial TV services. Digital UK and Ofcom have acted to make sure that consumer information is available in advance of switchover so that viewers can make a decision on which platform to adopt with full knowledge of the number of services that will be available to them.

Evolution of technical standards

- 2.38 The UK receiver market is open to entry by any manufacturer.
- 2.39 Some early receivers have not coped well with the evolution of the DTT platform. Although there are clear standards set out by industry bodies such as the Digital Television Group, compliance with these requirements is not mandatory and consequently, the features and performance of receivers varies.
- 2.40 One example is that as switchover progresses across the UK, a different version of the digital signal will be adopted known as “8k” (before switchover, the mode in use was “2k”). Some older receivers are unable to cope with the new mode and therefore stop working, or require an upgrade, at switchover.

- 2.41 Ofcom consulted on the use of the 8k mode in 2005 as it gave the flexibility to use 'single frequency networks', where nearby transmitters can reuse the same frequencies provided that the transmissions are accurately aligned. This improves spectrum efficiency and coverage. This impact on a relatively few older receivers was known about at the time of the consultation. Digital UK has comprehensive information about the receivers affected and is able to advise viewers accordingly.
- 2.42 The Government's Digital Certification Mark Licence (administered by the Department for Business, Innovation and Skills) sets out a minimum standard for DTT receivers. Devices carrying the 'Digital Tick' logo give consumers confidence that the product will continue to work beyond switchover.

The launch of High Definition services

- 2.43 In 2007, the broadcasters approached Ofcom about the desirability of introducing high definition services to the digital terrestrial TV platform in the UK with the aim that the platform could maintain its competitiveness with cable and satellite TV.
- 2.44 The broadcasters' initial request was for additional spectrum to be set aside for additional multiplexes to be broadcast that would carry high definition services. Ofcom made an alternative proposals that suggested that high definition broadcasts could be broadcast without the use of additional spectrum.
- 2.45 Ofcom consulted on these proposals in late 2007. It was agreed with the BBC that the second BBC multiplex (BBC multiplex B) should be cleared of existing services at switchover in each region to allow the introduction of high definition services using new technical standards (principally DVB-T2 and MPEG4). It was estimated that three high definition services could be carried at launch with up to two additional services as technology improves in the following few years.
- 2.46 Ofcom made recommendations to the Government, which in turn instigated the necessary Parliamentary order to give Ofcom the powers to effect the reorganisation.
- 2.47 In 2008 Ofcom advertised for service proposals from the commercial public service broadcasters, that would be broadcast in Multiplex B alongside a BBC high definition service.
- 2.48 Ofcom has subsequently awarded licences to ITV and Channel 4/S4C and is in discussion with FIVE in connection with a fourth service.
- 2.49 High definition services from the BBC and ITV were launched at the Winter Hill (Granada) and Crystal Palace (London) transmitters on 3rd December 2009. Services from Channel 4 and S4C (in Wales) will commence in spring 2010.
- 2.50 The high definition services will be rolled out across the UK with Digital Switchover. In areas where switchover has already completed, HD services will be introduced during 2010 and it is expected that around 50% of UK households will be covered by HD DTT broadcasts by June 2010.
- 2.51 Viewers that wish to receive the new high definition services will need to buy a compatible set-top box or integrated television set. These are expected to become available on the market by the end of March 2010.

Clearance of 800MHz band

- 2.52 Analogue TV formerly occupied 46 UHF frequency channels across the UK, with the relatively low power pre-switchover digital services occupying the small 'gaps' in that spectrum. The technical planning for digital switchover has proceeded with the aim of allowing 14 of these UHF channels to be released for new uses (for example mobile communications, more television services or wireless broadband) as the 'digital dividend' spectrum.
- 2.53 In the original planning for digital switchover, UHF channels 63 to 68 were among the frequencies identified for release. Other European countries subsequently announced their own plans to release digital dividend channels, which in some cases differed from those being proposed for release in the UK.
- 2.54 In view of the emerging position in Europe, it was appropriate for the UK to consider the benefits of aligning its digital dividend frequencies with others in Europe, and the UK Government decided to add channels 61 and 62 to the released spectrum. It was also decided to retain two extra channels, 39 & 40, (which were previously planned for release) for TV broadcasting. The new channel release plan therefore retains the same overall amount of spectrum for TV broadcasting use as the original plan, allowing high levels of signal availability to be maintained.
- 2.55 A programme by the broadcasters, transmission operators, and Digital UK to implement the clearance of channels 61 & 62 is now being planned. It is expected that implementation will begin in 2011 and be complete by 2013. Where possible the changes will be carried out at the same time as switchover. However, this is not possible in all cases and some transmitters will need to change the frequencies they use at some point switchover, requiring digital terrestrial TV viewers to retune their receivers. Digital UK will be responsible for communicating information on the changes to affected viewers.

Clearing channels 61 & 62 is expected to substantially increase the value of the digital dividend spectrum for reuse by mobile communications services, and the costs of the clearance programme will be met by the Government.

Section 3

Radio in a changing media world

The implications of changes in consumption and technology

- 3.56 Convergence makes it harder to consider radio as a distinct industry; it is now part of a wider media landscape. The consumption of audio is changing, as the content and the platforms used to deliver it evolve, but it still has unique characteristics.
- 3.57 In the audio market, broadcast radio has a particular role to play. Radio has consistently delivered public value over the past 80 years, and can do so in future.
- 3.58 Radio has content and characteristics that citizens and consumers value a great deal: news and information, companionship, interaction, localness, immediacy, and entertainment. Not all of these are exclusive to radio, but there is still a demand for these things as part of linear, streamed audio services, receivable free of charge on portable and mobile devices.
- 3.59 We can distinguish between radio as a distribution technology, and separately in terms of content. Digital technologies are an opportunity and a threat to both:
- A range of alternative digital platforms including fixed and wireless broadband, mobile and satellite can offer content that dedicated radio platforms have historically monopolised. Some of these platforms provide functionality not possible on the traditional analogue broadcast platform, notably interactivity and data services, and the ability to receive services from any location. These networks coupled with increasing device storage offer an increasing choice of audio services that can be accessed anywhere, and radio will need to respond to these new challenges.
 - Radio brands and services have the opportunity in the digital space to become cross-platform, deliver their content in new ways, and offer new services including video and interactivity. Similarly, brands and services from other sectors have new opportunities to enter the audio space.
- 3.60 However, analogue terrestrial radio broadcasting as a technical distribution platform currently provides a unique combination of features: efficiency of distribution, universality, mobility, and ubiquity. The immediate challenge for the platform is that there is no more spectrum to cater for the demand for more analogue community services, or to provide more UK-wide analogue services to allow commercial radio to compete on a more level playing field against the BBC.
- 3.61 Radio as a content industry also currently provides types of content not easily available elsewhere, particularly 'soft' types of local content (i.e. community-building content like discussions, event coverage, local competitions), content catering to other niche communities, and specialised/selected music content. The immediate challenge for regulation of this industry is how to secure these for consumers, in the face of changing economics.
- 3.62 But the scale of the radio industry in the UK might make it difficult to sustain multiple sets of costs from different distribution mechanisms.

- Our financial analysis suggests that - compared with television - the radio industry has high operating costs, relative to revenues; and a relatively high proportion of operating costs are due to transmission (around 10% of commercial radio's revenues are spent on transmission).
- In a world where multiple distribution channels for radio content are likely to coexist, each having its own separate set of costs, there is a question of how many distribution channels are sustainable, given the scale of the UK radio industry.

The analogue radio market and the launch of DAB

- 3.63 The original radio services launched by the BBC in 1922 were on AM (also known as Medium Wave and Long Wave). However, there was limited availability of AM frequencies and so the amount of choice for listeners was limited.
- 3.64 In 1955 the BBC launched FM services. FM offered better sound quality than AM, but listeners needed to buy new radio sets to listen to FM stations. For many years the BBC broadcast all of its services on both FM and AM. When local commercial radio launched in 1973, it also broadcast its services on both FM and AM. This simulcasting on two wavebands may be one reason why it took until the 1980s for most listening to be to FM.
- 3.65 In the late 1980s both commercial radio and the BBC began to offer different services on FM and AM, so listeners now had to buy a set capable of receiving both AM and FM if they wanted access to the full range of services.
- 3.66 There are currently 5 national BBC radio networks (BBC Radios 1 to 4 on FM, and BBC Five Live on AM) and 46 BBC local and nations' stations. There are also 3 national commercial networks (Classic FM on FM and Absolute Radio and Talksport on AM) and there are 300 local commercial services plus 160 community services broadcasting on AM or FM.
- 3.67 In 1995 the first DAB services were launched. DAB now carries all of the national analogue services plus a number of digital-only services from the BBC and commercial radio. It also carries most BBC local and nations' services and the vast majority of the large local commercial services. The small local services and community services tend to be available only on FM. Coverage of DAB is currently just under 90% and new transmitters are still being opened. The services which are already available on DAB account for over 95% of all radio listening (although most of the listening to those services is still on analogue).
- 3.68 The vast majority of DAB sets now being sold also include FM, so listeners with these sets will be able to listen to all the services available in their area, both DAB and FM.

The place of DAB in a digital world

- 3.69 The Digital Britain report and subsequent Digital Economy Bill set out the Government's policy for DAB to become the primary distribution network for radio.
- 3.70 Digital technologies offer the consumer benefits of greater choice (both of audio content and of the means to access it), potentially more robust reception, data services (e.g. information to accompany radio programmes, traffic information), and easier service navigation using Electronic Programme Guides.

- 3.71 At present DAB accounts for the majority of digital radio listening. It is the only digital radio platform in the UK that offers coverage to mobile devices (notably cars – albeit with limited current availability) and is free-to-access (without charges for either content, or carriage of that content). It has considerable take-up and usage: The DRDB reported over 10.0m sets sold by the end of 2009; RAJAR reported penetration of 32.3% of households (Q3 2009) and a 13.3% share of all radio listening compared to internet listening at 2.2%) – see Table 1. This together with the investment in transmitter infrastructure made by the BBC and the commercial sector means that there would be substantial consumer (and industry) detriment associated with the loss of the DAB platform.

Table 1: Radio listening by platform

	Sept '08	June '09	Sept '09
All Radio Listening			
Weekly Reach ('000) ~	45,084	46,327	45,721
Weekly Reach (%) ~	88.9	90.3	89.2
Average hours per head	19.8	20.1	19.7
Average hours per listener	22.3	22.2	22.1
Total hours (millions)	1,003	1,029	1,008
All Radio Listening - Share Via Platform (%)			
<i>DAB</i>	<i>11.3</i>	<i>13.1</i>	<i>13.3</i>
<i>DTV</i>	<i>3.2</i>	<i>3.6</i>	<i>3.6</i>
<i>Internet</i>	<i>2.2</i>	<i>2.2</i>	<i>2.2</i>
<i>Digital Unspecified *</i>	<i>1.9</i>	<i>2.1</i>	<i>2</i>
All Digital	18.7	21.1	21.1
AM/FM	68.4	66.2	66.1
Unspecified *	12.9	12.7	12.8
Total	100.0	100.0	100.0

Source RAJAR / Ipsos MORI / RSMB

* Inevitably, there is a certain amount of unspecified listening because either the respondent is unsure, or it is not always possible for them to know whether the station to which they are listening is being broadcast on analogue or digital, or via which platform. Every effort is made by RAJAR to ensure the instructions given to both interviewers and respondents.
~The unduplicated number of different people listening to any specified service over a specified period of time, expressed as a percentage of the total universe and/or as an absolute figure.

- 3.72 There are various other digital platforms, and each is suited to different listening requirements. Currently some have limitations, but these may be overcome in time.
- Portable WiFi radios may become the norm for listening to internet radio: these devices could take off once channel navigation becomes standardised, and device cost decreases (a likely outcome of global market scale).
 - The universal accessibility of digital television and broadband from 2012 may change the picture of how radio services are consumed, and how radio services fit in the overall picture of audio consumption.

- The current advantage of mobility that DAB enjoys over internet radio may be eradicated by new 4G/LTE mobile broadband, or by new multicast technologies delivered on current wireless access networks (e.g. MBMS over 3G), although it is likely in either of these cases that consumers would need to pay to access radio services delivered in this way (even if the operational efficiency becomes closer to that of DAB through implementation of multicasting technology).
- 3.73 It is difficult to predict how these will grow in future, and which may become the frontrunner. A lot will depend on the content and services that are offered on different platforms, and the ease and cost of accessing them.
- 3.74 We believe that, whatever other digital technologies may emerge in the next few years, DAB will be crucial for the digital delivery of free-to-access, linear audio services to affordable portable and mobile devices.
- 3.75 It is likely that consumers, faced with greater choice of services and service types on other audio platforms, will have emerging needs and expectations that a simple DAB platform cannot satisfy. Our ongoing analysis therefore suggests that the core DAB service offer will over time be enhanced by other networks (including broadband and mobile wireless) to deliver a wider range services and functionality (niche channels, interactivity, targeted content/programmes and advertising).
- 3.76 We therefore think that DAB could become the 'Freeview of the radio world', in two senses:
- First as a consumer proposition of a wide range of free-to-access mainstream and niche services;
 - Second as a bedrock, entry-level platform that would be supplemented by a range of other audio delivery technologies.
- 3.77 If this is to happen, then Government, Ofcom, and industry stakeholders will all need to play a role in facilitating the continued growth of the DAB platform.
- Regulation and legislation will need to change to facilitate the continued growth of the DAB platform. The Digital Economy Bill includes provisions which would allow Ofcom to allow commercial operators to improve their viability and facilitate digital switchover. Ofcom has already set out in a consultation how we might implement some of the changes the legislation would permit should Parliament decide to take forward these provisions.
 - Coverage and reception will need to be improved, as the Digital Britain report noted. This will need action from both BBC and commercial industry stakeholders, and may need facilitation from Government and/or Ofcom.
 - Perhaps most importantly, though, we recognise that consumers will be driven to use the DAB platform by the content and data services that it offers. We therefore look to the radio industry to provide a wider and more consistent offering of high quality content, and also to develop and promote greater use of the other consumer benefits DAB can offer in terms of programme guides, text and data services.
- 3.78 In proceeding towards any digital migration, much depends on the timescale, the detail, and the industry's appetite for commercial investment and marketing. But it is

more likely that the timescale suggested in the Digital Britain Report will be met if Ofcom and Government take a series of actions to ensure the regulatory and legislative framework supports existing services and platforms so that migration could occur, for example, to facilitate greater take-up of DAB.

The structure of the DAB market in the UK

- 3.79 DAB operates using multiplexes (a single frequency which carries up to 11 services). There are currently two national multiplexes (one BBC and one commercial). Because each multiplex operates on a single frequency across the UK it cannot offer different programmes in different part of the UK.
- 3.80 There are also currently 46 local multiplexes around the UK with 13 more licensed but not yet on air. Further frequencies are available to provide local multiplexes for those areas not yet served. (see Annex 1 – map of local and regional multiplexes)
- 3.81 The multiplex system has several implications:
- All of the services carried on a multiplex have identical coverage
 - Building a local multiplex is quite expensive compared to FM
 - But because a multiplex can carry up to 11 stations, the cost of the multiplex can be shared between those stations
 - Therefore DAB is not an appropriate technology for single local stations who have no-one else to share the costs
 - Even if it was economic for each small scale station to have its own multiplex (which it isn't) there is insufficient spectrum to allow for this.
- 3.82 The BBC's local radio services in England, and BBC Radio Scotland, nan Gaidheal, Wales, Cymru and Ulster have reserved capacity on the relevant local commercial multiplexes. There is no spectrum to give the BBC its own local or nations' multiplexes and in any case this would not be sensible as the BBC would only have a couple of services to put on the local multiplex in each case, so it would not provide good value for money.
- 3.83 (Note: some have suggested that the UK should switch now from DAB to DAB+, a later variant of DAB technology. The main difference between the two is that DAB+ allows for a greater number of stations to be carried on the same amount of spectrum – estimates vary between 50% more and 250% more. DAB+ is therefore a more spectrum-efficient technology, which could mean lower transmission costs per station carried, provided that there was sufficient demand from operators wishing to provide services in the area covered by that DAB multiplex. However, of the 10 million DAB sets sold in the UK, only a tiny proportion can receive DAB+ transmissions. In the future we expect all new sets sold to be capable of receiving DAB+, but at this stage the installed set base suggests a move to DAB+ transmission would not make sense either for listeners or for stations operators for a number of years, until the vast majority of sets being used can pick up these services.)

The different sectors within radio, and the issues facing each

- 3.84 The BBC continues to play a major role in radio in the UK, accounting for over half the audience. The BBC's five analogue UK-wide services and 46 local and nations

services are complemented by five digital-only stations. The BBC has been at the forefront of promoting digital radio take-up.

- 3.85 We believe the aim should be to put in place the regulatory and legislative conditions which will allow three different tiers of radio to thrive alongside the BBC, both now and in an increasingly digital and converged world. Based on audience research and financial analysis we have so far carried out, a successful and sustainable future radio market could consist of:
- At the UK-wide level, a larger number of commercial radio stations than today: catering for both mainstream and niche audiences, providing a plurality of voices and viewpoints, complementing and competing with the BBC's existing UK-wide services.
 - At the large local and Nations level, a set of viable commercial radio services in every part of the UK (probably fewer stations in number than today). These would be of a size large enough to deliver high quality local news and information services as well as 'softer' types of local content, and would provide a plurality of voices and viewpoints, complementing and competing with the BBC's existing services.
 - At the most local level, a tier of small-scale stations, some commercial and some community, focusing on local programming for the communities they serve, wherever there is demand and such services are sustainable (i.e. not ubiquitous).
- 3.86 All of these services should be available free-to-access, on affordable mobile and portable devices.
- 3.87 A major issue for the radio industry is that the costs of transmitting on both analogue and DAB are high. The majority of listening is still to analogue but DAB offers benefits in terms of new opportunities for more stations, better reception and, particularly for national services, cheaper transmission costs (around £800k per national station per annum on DAB compared to around £3m per annum for FM).
- 3.88 But for small stations, the costs of DAB transmission are prohibitive (around £70-100k per station per annum on DAB compared to £5-25k on FM) and the technology is not suited to individual local stations covering a bespoke area.
- 3.89 As a result, the operators of national and large local stations have been arguing for a switchover from analogue to DAB for their stations. Operators of smaller stations are worried about being left behind on analogue if most listening transfers to DAB, but recognise they could not afford to transfer to DAB themselves.
- 3.90 As set out in the Digital Britain report and provided for in the Digital Economy Bill, in the event of DAB migration, the first two tiers would migrate to DAB-only, and the lowest, most local tier would remain on FM (although they may choose to simulcast on digital platforms).

National commercial services

- 3.91 Commercial radio services can achieve scale through UK-wide audiences, enabling them to invest in content and talent to create mass appeal services, or to make niche services viable. But historically there has been little competition for the BBC or plurality at the UK-wide level, mainly due to spectrum constraints. Digital platforms

offer an opportunity for commercial radio to compete with the BBC in terms of choice and variety at a national level.

- There are only three analogue UK-wide commercial services and only one of those (Classic FM) is on FM. While it would be possible to reconfigure the FM band to provide an additional two or three UK-wide services, this would take many years to achieve, would need international coordination, and would be at the expense of losing local stations.
- An alternative would be to allow existing local analogue stations to merge, but at best this would also only create two or three quasi-national services, and also at the expense of localness.
- DAB (or another broadcast digital platform) can overcome this spectrum limitation, because of the possibility of distributing multiple services through a single multiplex. The problem then becomes an economic one: finding the resources to invest in content until the take-up of that digital platform grows enough to provide sufficient revenues.
- There is a chicken-and-egg element to this: DAB take-up has not been as fast as it might have been due to the lack of a range of well-funded, well-marketed commercial stations to complement the BBC.

Large local commercial services

3.92 Local radio is highly valued by audiences, for informational content such as local travel and weather, for local journalism and news, and for ‘softer’, community-building local content, such as discussion, entertainment guides or just a shared sense of local identity between presenter and audience.

- Local radio is provided by the BBC at county level for most places in England and by nations’ services in Scotland, Wales and Northern Ireland. It is also provided by over 300 local commercial radio stations across the UK ranging in population size from a couple of thousand to ten million. Around 150 of these 300 commercial stations are already carried on DAB. (Note: In total over 95% of all radio listening is to stations already carried on DAB)
- Audience views of the most appropriate level of localness vary (e.g. depending on where they are in the UK) but there is a strong public service argument for ensuring that every part of the UK has both BBC local (or nations’) radio alongside at least one well-resourced local commercial competitor.
- We would want these commercial stations to be large enough to be viable, but also to be close enough to the communities they serve to remain relevant. This would require some restructuring of the current market.

Small-scale radio

3.93 Community radio is a recent innovation in the UK. Stations operate on a not-for-profit basis, generally covering small areas of up to 5km radius, and are required to deliver social gain to one or more communities.

- 215 stations have already been licensed (160 are already broadcasting). Some serve geographic communities while others serve communities of interest such as minority ethnic groups, young people or religious groups. Most are staffed largely

by volunteers and each station has a set of 'key commitments' - part of its licence - specifying how it will deliver social goals, for example in respect of training, access and accountability.

- While there are a large number of stations, taken together they only cover about 15% of the population and have limited financial resources and so for many consumers, community radio cannot replace local commercial radio.
 - The further growth of community radio is now very limited due to spectrum constraints and so the proportion of the population served by community radio is unlikely to grow significantly beyond the current 10% unless a digital solution is found or spectrum is freed-up by the migration of larger local services to DAB.
- 3.94 Small-scale commercial stations (generally those under around 300,000 population) often share some of the characteristics of community radio. Many stations at this level are struggling financially. Although commercial stations have greater freedoms than community stations in terms of output and raising revenues, there may be a case for considering the small-scale radio sector as a whole (commercial plus community) in future. It is worth noting that these stations currently account for less than 5% of all radio listening but they nevertheless make a valuable contribution to local communities.
- 3.95 Small-scale commercial services and community services cannot generally afford carriage on DAB and in any case the size of the DAB footprint and technical characteristics of DAB do not make it suitable for small stations.
- 3.96 For this reason, this tier of radio services is currently not expected to be part of any digital migration plan, and is likely to remain on FM for the medium-term, although many are also available online. In the longer-term, the aim should be to find a suitable way to migrate both small-scale commercial stations and community stations to digital platforms. A migration of DAB to DAB+ at some point in the future may provide an answer for some of these stations in the future but is unlikely to be suitable for all.
- 3.97 In the event of digital migration of national and large-local stations, we would expect that this tier of smaller stations will benefit from the availability of freed-up FM spectrum, allowing any community that wants and can support such a station to have one. But in the meantime we need to ensure that this tier of small-scale stations has sufficient flexibility to maximise their chance of success in serving their audiences.
- 3.98 *Note: The distinction between large and small-scale stations. Community radio stations are clearly demarcated, but there is no clear or statutory distinction between large commercial radio stations and those that operate at a small scale. In due course it will be for the Secretary of State to determine which stations migrate on the basis of which stations are small and which are large. The boundaries between these categories have not yet been drawn, but we have suggested four criteria, broadly correlated, which the Secretary of State could use to distinguish small commercial radio stations from larger: the proportion of the existing local DAB multiplex area covered, the adult population covered, the geographical area covered, and the fact that these stations are not currently simulcast on DAB.*

Annex 1: Map of licensed local and regional DAB multiplexes

Local multiplexes shown in solid colours, regional multiplexes shown hatched.

