

The Communications Market: Digital Progress Report

Digital TV, Q4 2005

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Contents

Section		Page
1	Executive summary	2
2	The growth of digital TV	4
3	The digital TV market in the UK	16
4	Digital switchover in the UK and abroad	26
Annex		Page
1	Digital TV take-up: platform details	33

Section 1

Executive summary

- 1.1 By the end of 2005, around 17.5 million homes could receive digital TV in the UK – just under 70% of all TV households. Although data are not available for all platforms for early 2006, preliminary sales data for Freeview boxes suggest that by the end of February 2006 digital penetration had exceeded 70% of UK homes.
- 1.2 Digital take-up continues at a rapid rate. More than 1.1 million households took up digital TV in the fourth quarter of 2005 – more than in any previous quarter. Over 800,000 of these acquired Freeview or Top Up TV. Over the whole of 2005, more than 2.7 million homes took up digital TV – more than in any previous year.
- 1.3 There are now more homes subscribing to Sky's pay-TV services than there are using any other television platform in the UK, including analogue terrestrial broadcasts, as their principal source of TV. By the end of 2005, there were 7.7 million Sky subscribers in the UK compared to 7.1 million homes watching analogue terrestrial broadcasts on their primary sets – the first time the analogue terrestrial platform has not been the most common way to receive TV in the UK.
- 1.4 This shift is due both to large numbers of homes switching from analogue terrestrial television to digital terrestrial services, and to continued growth in Sky's subscriber base. More than 10.5 million Freeview boxes and integrated digital TVs had been sold by the end of 2005, with digital terrestrial television accounting for seven in ten new digital homes in 2005. The average price paid for a Freeview box has halved since mid-2003, to around £41 at the end of December 2005.
- 1.5 The pattern of digital take-up continues to vary across the nations and regions of the UK. In Wales, digital penetration had reached 80% by the end of 2005. Digital penetration in Border – the first region to switch off analogue signals in the second half of 2008 – has increased by 17 percentage points over the past year and now stands at 71%. With respect to demographic variations, younger people and those with children in the home are more likely to have taken up digital TV than others.
- 1.6 Ofcom's latest modelling suggests that digital TV penetration will continue to grow over the next few years, as a result of both continued market-driven digital take-up and by the implementation of digital switchover on a region-by-region basis, starting in Border in 2008. In 2006, we expect more than 1.7 million homes to take up digital TV; thereafter the number of digital households will continue to grow steadily at around one million homes per annum. By the end of 2010, we expect around 95% of homes to have taken up digital TV of one form or another.
- 1.7 Most homes have more than one TV set, each of which needs to be converted to digital (or replaced by an integrated digital TV) if viewers wish to continue to use them for viewing broadcast TV after switchover. By the end of 2005, just under one in four homes had fully converted all its sets, up from 16% in March 2005. Sales of integrated digital TV sets doubled between Q3 and Q4 2005.
- 1.8 Nonetheless there are still many TV sets in people's homes that have not been converted. Almost 60% of all TVs (36 million) still receive analogue transmissions. However, not all sets will need to be converted by digital switchover – some are not currently used and others are only used for games consoles or DVD players, and may not need to be converted for TV reception.

- 1.9 Nearly half of all TV viewing (including viewing on secondary sets) is through the analogue terrestrial signal. However the amount of viewing to the analogue signal has declined from nearly two-thirds of all viewing in 2002, and will decline further as digital take-up (and conversion of secondary sets) continues.
- 1.10 There are currently an estimated 34 million VCRs in use in the UK. Those that viewers use for recording one programme while watching another – currently around 25% of VCRs (7.5 million recorders) are used in this way at least once per month – will need to be replaced by personal video recorders (PVRs) if viewers wish to retain this functionality. By the end of 2005, around 1.4 million PVRs had been sold (mostly Sky+ boxes) and 2.3 million DVD recorders. Most of the latter do not have integrated digital tuners, however, and cannot replicate the full functionality of analogue VCRs.
- 1.11 The UK now has the highest digital TV penetration of any country in the world, with the US second at 55% of TV homes. Many countries have announced detailed plans for digital switchover, with some areas in Germany and Sweden already having switched off analogue TV broadcasting.

Section 2

The growth of digital TV

Digital take-up continues at a rapid rate

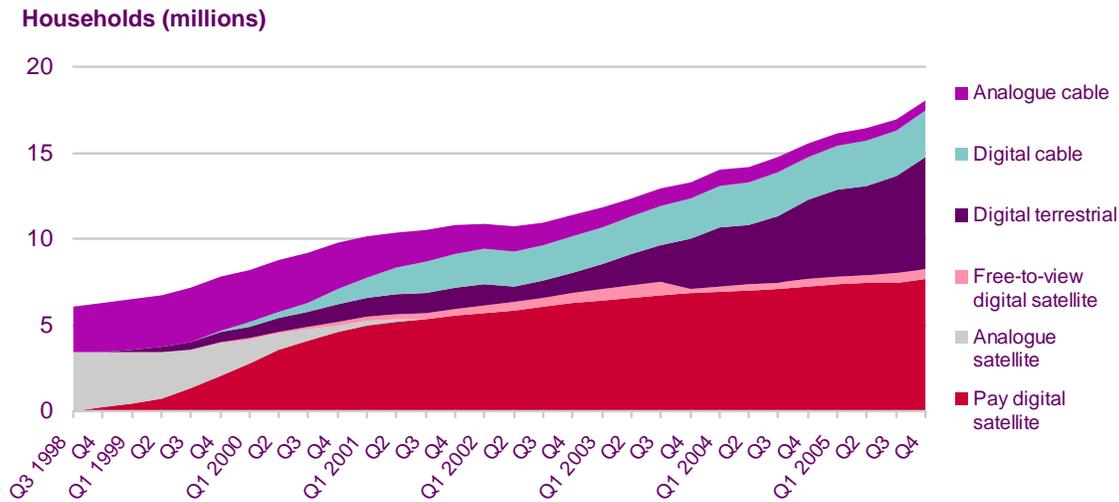
- 2.1 Since Sky and OnDigital launched the first digital services in the UK in late 1998, over 17.5 million homes have taken up digital TV services. Platform operators' confirmed figures for the fourth quarter of 2005 show that penetration of digital TV had reached 69.4% of all UK TV homes by the end of 2005; preliminary sales figures for Freeview boxes and integrated digital TVs (IDTVs)¹ suggest that by the end of February 2006, increases in digital terrestrial homes alone were sufficient to take total digital penetration above 70% for the first time.
- 2.2 The rate of growth in digital TV remained high in 2005. More than 1.1 million households took up digital TV in the fourth quarter of 2005, with total penetration increasing from 65.4% of all TV households at 30 September 2005 to 69.4% by the end of the year. The key developments in the fourth quarter of 2005 were:
- take-up of all digital platforms increased;
 - digital terrestrial television (DTT) accounted for most of this increase, with over 1.9 million sales of Freeview set-top boxes and IDTVs in the fourth quarter. This is significantly greater than the 1.4 million sales for the corresponding period in 2004;
 - on satellite, the number of Sky subscribers in the UK increased by 194,000 to reach 7,666,000 at the end of Q4 2005;²
 - the total number of subscribers to cable television increased slightly during the quarter and is just over 3.3 million. Digital cable subscribers increased by over 71,000, while analogue subscriptions fell by 58,000. Digital cable now accounts for 2.72 million of the total cable subscriber base;
 - the number of households with Freeview or other digital terrestrial services³ as the **only** digital TV service is estimated to have grown to around 6.5 million by the end of December 2005, up by around 800,000 over the quarter.
- 2.3 Latest estimates suggest there are also around 595,000 free-to-view digital satellite homes. This figure includes viewers who are no longer Sky subscribers but still receive the public service channels through their set-top box. Also included in this figure are viewers who are able to receive the public service channels by using a 'Solus' card.
- 2.4 In addition, at the end of 2005, 2.4% of households subscribed to television services via analogue cable, bringing the total receiving some form of multichannel television to 71.8%. Fig 1 shows how the total of multichannel households has grown since the launch of digital services in 1998.

¹ Source: GfK

² This excludes Sky subscribers in the Republic of Ireland

³ In general, 'Freeview homes' generally includes Top Up TV subscribers (for whom there is no recent data in the public domain) and ex-ITV Digital homes

Figure 1. Digital and multichannel penetration of UK households

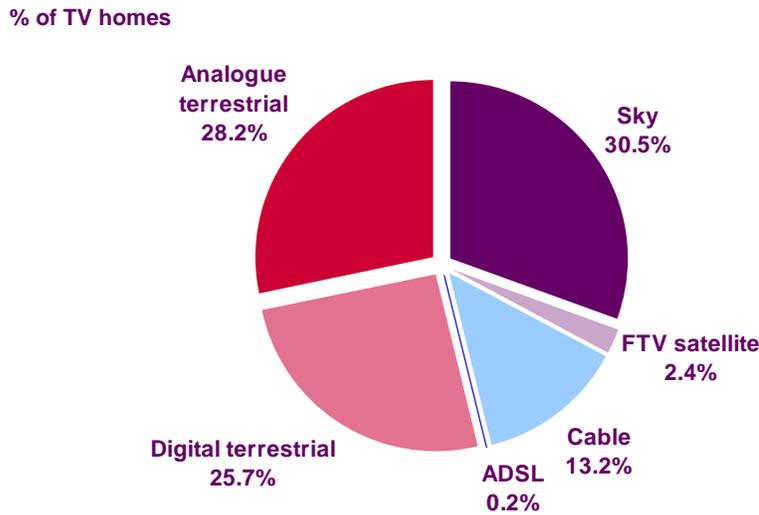


Source: Ofcom

Sky is now the single largest TV platform in the UK

- 2.5 By the end of 2005, there were more Sky subscribers than there were homes watching any other TV platform, including analogue terrestrial-only TV. This is a consequence of continued growth in the Sky subscriber base and large numbers of households switching from analogue terrestrial viewing to digital terrestrial services.
- 2.6 Sky pay-TV services are now present in nearly a third (30.5%) of all TV homes, with free-to-view satellite received in a further 2.4% of homes. A little over a quarter of homes (25.7%) are served by digital terrestrial services. Cable serves 13.2% of homes and ADSL (HomeChoice and Kingston Interactive Television) serves 0.2%. Just over 28% of all TV homes (7.1 million households) rely exclusively on analogue terrestrial broadcasts (Fig 2).

Figure 2. Market share of major TV platforms, 31 December 2005



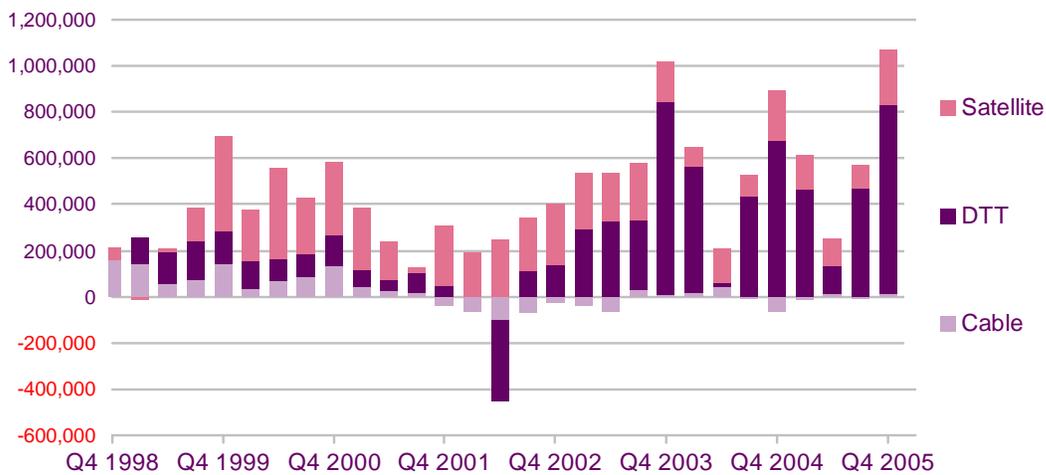
Source: Ofcom

More households took up digital TV in 2005 than ever before

2.7 Just over 2.7 million households took up digital TV in 2005 – more than in any previous year, if conversions from analogue cable or satellite services to their digital equivalents are excluded. There are no signs as yet that growth in digital take-up is slowing – in fact more homes acquired digital TV in the fourth quarter of 2005 than in any previous quarter since the launch of digital services in 1998 (Fig 3).

Figure 3. Quarterly multichannel TV net additions, Q4 2002 – Q4 2005

Net new multichannel homes by platform

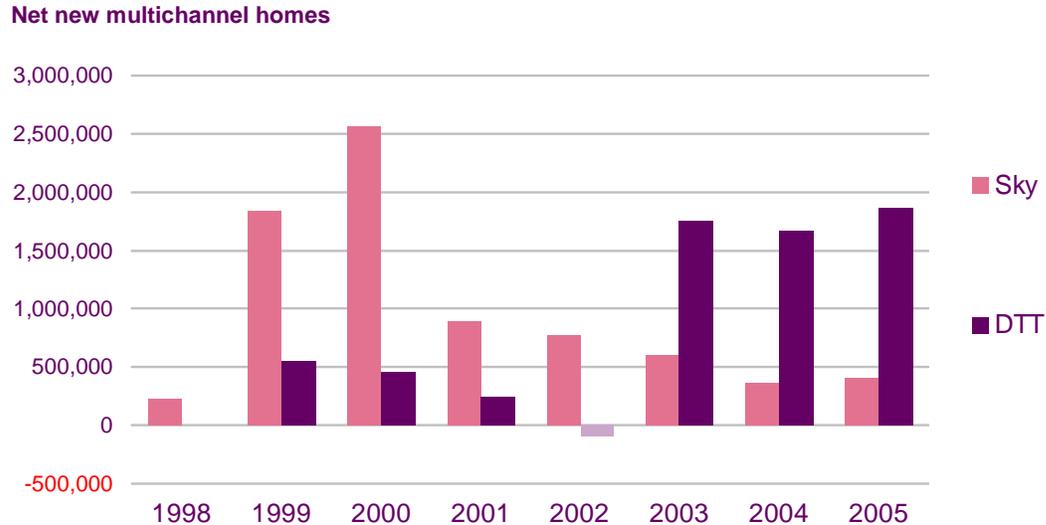


Source: Ofcom

DTT accounts for seven in ten new digital TV homes

2.8 Although Sky is now the largest TV platform in the UK, digital terrestrial television has accounted for the majority of new digital TV homes over the last couple of years (Fig 4). Until Freeview's launch in 2002, Sky delivered most new multichannel subscribers, with cable and digital terrestrial services adding relatively few new customers. Since 2003, Freeview take-up has outstripped Sky subscriber growth to the extent that in 2005 Freeview accounted for 69% of all new digital homes.

Figure 4. Sky and DTT share of new multichannel homes, 1998-2005



Source: Ofcom

Note: Excludes free-to-view satellite

2.9 Nonetheless, Sky has continued to find new customers and maintained year-on-year growth despite a more competitive market. Indeed Sky's net subscriber additions in the UK in 2005 were greater than in 2004 (404,000 compared to 369,000).

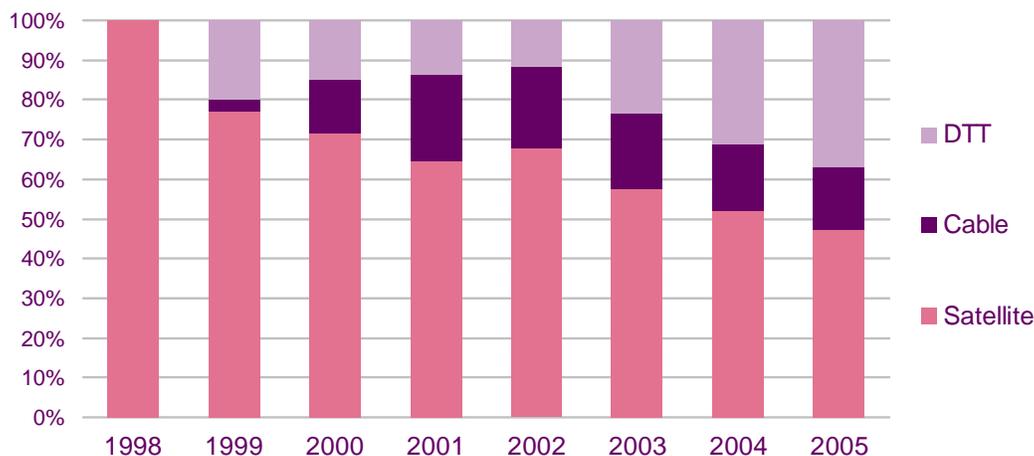
Freeview's share of the multichannel TV market continues to grow

2.10 As a result of continued strong Freeview sales, the digital terrestrial platform's share of the digital TV market (i.e., the proportion of digital households using digital terrestrial as their sole TV platform) has steadily increased since Freeview's launch in October 2002.

2.11 37% of digital homes received Freeview (or Top Up TV) as their only digital service by the end of 2005, compared to 47% of digital homes receiving satellite services including free-to-view satellite. Despite steady growth in Sky's subscriber base and free-to-view satellite homes, satellite's share of the digital TV market has declined from a peak of 68% since the introduction of Freeview while cable's share has dropped from 22% to 16% (Fig 5).

Figure 5. Market share of leading digital TV platforms, 1998-2005

Share of digital TV homes by platform (at year end)



Source: Ofcom

Note: Satellite includes free-to-view satellite and Sky subscribers, DTT includes ITV Digital, DTT set-top boxes and IDTVs, cable includes analogue and digital

Digital TV penetration forecast to grow steadily in the run-up to switchover

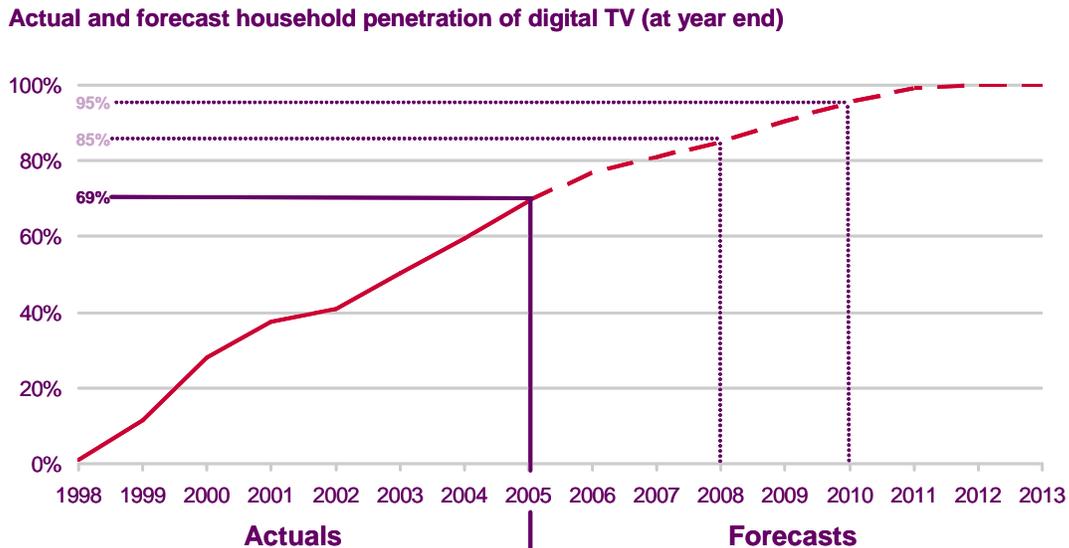
- 2.12 For this report, Ofcom has carried out new modelling to project the growth of digital TV between now and the final switch-off of analogue TV broadcasts in the Tyne Tees and Ulster ITV regions in 2012.⁴ Ofcom last modelled switchover in 2004, before confirmation of the timetable for switchover, and conditions in the market have changed substantially since then. The current model is a simplified version of the one used in 2004.
- 2.13 Future growth will be a consequence of both further market-driven take-up, as more consumers choose to acquire the additional services available on digital platforms, and by the gradual implementation of digital switchover on a region-by-region basis, which will extend the availability of digital terrestrial signals to currently unserved areas. In advance of switchover, DTT services will not be available across the whole of the UK, and we have assumed that cable networks are not significantly extended over the modelling period. The model therefore assumes that those consumers who want digital TV but live in areas not served by DTT or cable will tend to take up free-to-view or pay satellite services instead.
- 2.14 The model also takes account of the fact that some households say that they are unwilling to convert to digital TV until they are forced to,⁵ and the results are highly dependent on the assumptions made about when these households do actually convert. Although this is difficult to predict at this stage, we have assumed that most of these households will convert only in the last few months before switchover in their region.

⁴ The Channel Isles will not complete switchover until 2013, but this has not been included in the model due to the lack of data about digital take-up amongst the small Channel Isles population.

⁵ Research by The Generics Group in 2003 suggested that up to 15% of TV homes would not convert to digital services unless they were forced to, and that a further 5% of TV homes would not take up digital services even then. However, this research preceded the Government's confirmation of the timetable for switchover and we believe that developments in the market since 2003 suggest that these are over-estimates. For the purposes of this model, we have assumed that 12.5% of homes would prefer not to switch if they had the choice.

2.15 Based on these assumptions, our modelling suggests that digital take-up will continue to grow steadily over the next few years, as switchover starts to take place on a region-by-region basis. We expect digital penetration to grow by around 1.7 million homes in 2006, and on average by around one million homes per year thereafter, until 2012. We estimate that 85% of homes will have taken up digital TV by the time the first region (Border) switches over in the second half of 2008 (Fig 6). By the end of 2010, we estimate 95% of households will have taken up digital TV. By this time, the process of switchover will be half-completed, with the Border, Westcountry, Wales, Granada, West, Grampian and Scottish ITV regions all having switched off analogue broadcasts. Penetration will reach 100% by the end of 2012, with switchover in Tyne Tees and Ulster taking place in the second half of that year.⁶

Figure 6. Digital take-up – historic trends and forecasts

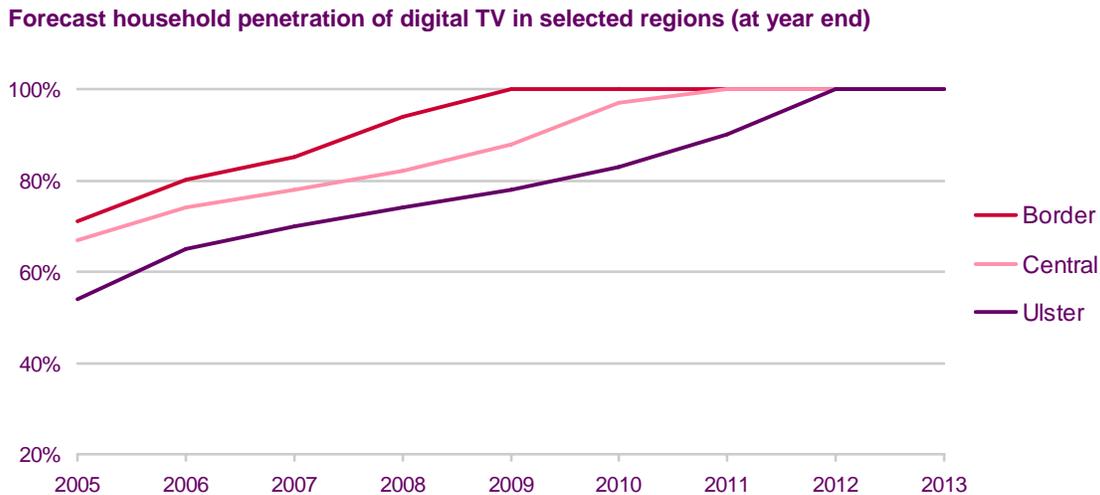


Source: Ofcom

2.16 Different regions will follow different take-up paths, depending on when they finally achieve switchover. However, as Fig 7 shows, we expect take-up to increase more quickly in regions that switch off sooner, as people in those regions become more aware of the switchover process and start to prepare for it. Take-up in each region reaches 100% as that region implements switchover, and any households that do not wish to take up digital services drop out of the base of TV homes.

⁶ As noted above, some people say they will not take up digital TV even when switchover happens. However we believe the number who choose to go without live TV completely rather than take up a digital service will be small. Those who do choose not to adopt digital TV after switchover will churn out of the base of 'TV homes', and therefore it is a truism that digital TV penetration in any given region will trend to 100% of TV homes at the point of switchover.

Figure 7. Digital take-up – regional forecasts



Source: Ofcom

2.17 Household penetration is only part of the story of digital switchover. Most households have more than one TV and each will need some kind of digital capability if consumers want to use it to watch broadcast TV after switchover. Conversion of secondary sets to date is described in more detail below; at this stage, our take-up model does not include projections of these data, but we expect to do more work in this area over the next few months.

Many TV sets remain to be converted

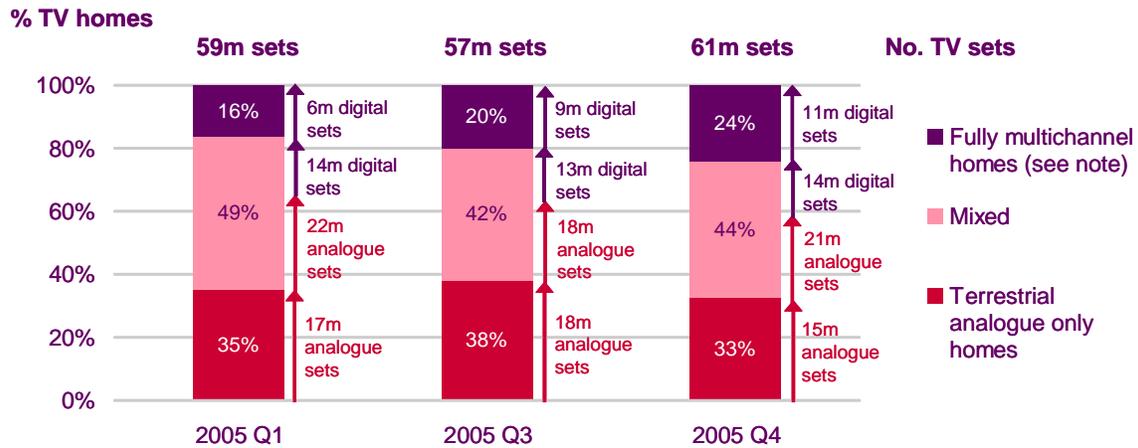
2.18 Almost seven in ten UK homes have access to digital television of one form or another. Yet less than a quarter have converted all their sets. Of course, not all sets need to be converted – many may not still be in use, and some will only be used for video games or playing back DVDs. Nonetheless, of the estimated 61 million TV sets in the UK, almost 60% have not yet been converted to digital, and it is clear that very large numbers of sets will need to be converted at or before switchover. Around 30% of homes have yet to begin the conversion process, and 76% of viewers still watch via the analogue signal at one time or another.

2.19 There has, however, been an increase in the proportion of people living in fully converted homes, from 16% in March 2005 to almost a quarter (24%) by December 2005. In addition the total number of digital sets has increased, from 20 million in March 2005 to 25 million in December 2005. The number of analogue sets in use has declined from 39m in March 2005, to 36m in December 2005.

2.20 Fig 8 shows these numbers in detail. By December 2005, according to Ofcom's Residential Tracker survey, 33% of adults lived in analogue terrestrial-only homes,⁷ and in total there were 15 million TVs in those homes. 44% of adults live in homes with some digital and some analogue TVs, and in those homes overall there are still more analogue sets (21 million) than digital (14 million). 24% of adults live in fully converted homes, representing a further 11 million digital TV sets.

⁷ Note that this survey finding is different from that generated Ofcom's digital TV take-up model, which found that 30.6% of TV homes received only analogue terrestrial TV at the end of 2005. However the variation is within the margin of error of the survey data, and it is important to bear in mind that the digital TV model reports **household** penetration while the survey reports **individual** penetration.

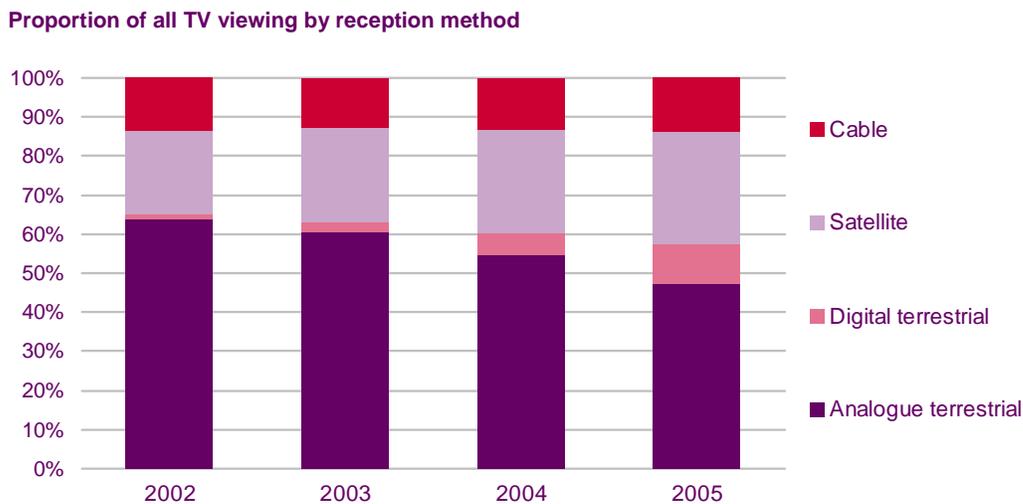
Figure 8. Analogue and digital TV sets, December 2005



Source: Ofcom Residential Tracker December 2005 Base: All adults with television (698)
 Note: Fully multichannel homes includes analogue cable. 'Digital' sets refer to sets equipped with any multichannel service, including analogue cable services, and do not refer solely to integrated digital TVs.

2.21 Even though the majority of homes are now equipped with digital TV, almost half of all viewing is to analogue signals. This is partly because of the large number of analogue sets still in circulation, and partly because even sets equipped with digital set-top boxes can be used to watch analogue transmissions if the box is switched off. Even amongst individuals in multichannel homes, a quarter of viewing takes place via an analogue terrestrial signal. However, as digital penetration has grown, so has the proportion of total television viewing which takes place via the digital signal, and the amount of viewing of analogue TV has declined from almost two-thirds of all viewing in 2002 to a little under half in 2005 (Fig 9).

Figure 9. Proportion of TV viewing through analogue terrestrial and digital signals, 2002-2005

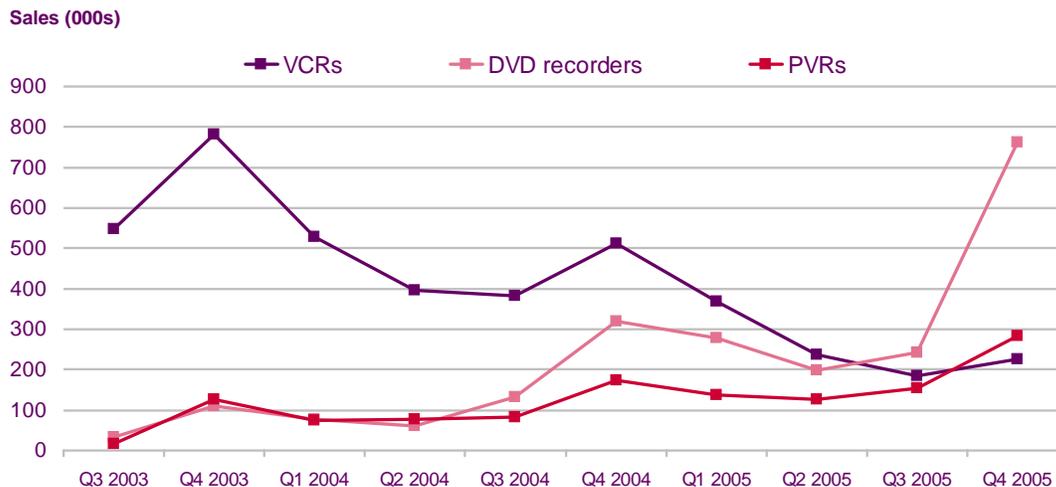


Source: BARB
 Note: Cable includes analogue cable viewing

PVRs and DVD recorders outsell VCRs

- 2.22 Sales of analogue video cassette recorders (VCRs) have declined by over 66% over the last two years whilst the market for DVD players has increased by 30% in the same period. With the average price of a DVD player now equal to that of a VCR, it is clear that consumers have been attracted by the improved picture quality and ease of use of the digital alternative.
- 2.23 The average price of DVD recorders has also fallen in the last two years, but it remains significantly higher than that of the VCR. But with a wide range of models now available for under £150 DVD recorders have reached a price point at which they are an attractive alternative for a growing number of people, with around 25% of people now owning a recordable DVD device. It is important to bear in mind that to date, most DVD recorders have not had integrated digital terrestrial tuners, which has meant that an additional box is required to receive digital services and that they cannot be used to record one channel while watching another.
- 2.24 As illustrated in Fig 10, sales of both DVD recorders and personal video recorders (PVRs), including Sky+ and Freeview PVRs, are now outperforming VCRs. Over 50% of DVD recorder buyers are over-55 indicating the combination of the functionality of the VCR with the increased picture quality, instant access to indexed content and the ease of use of these devices is valued by this group of users.

Figure 10. Sales of VCRs, PVRs and DVD recorders, 2001-2005



Source: GfK

Note: DVD recorders includes DVD recorders and hard disk recorders; PVRs includes Sky+ subscriptions and DTT PVR sales

- 2.25 Despite the dramatic decline in sales of VCRs, there are still around 34 million VCRs in use in consumers' homes, according to Ofcom's Residential Tracker survey. Even in a digital environment, these recorders can still be used in many of the same ways as they are at present – for example, for viewing existing recordings or pre-recorded tapes and for recording a programme as it's broadcast. They can also be used for setting timed recordings of future broadcasts, although only if the TV's set-top box is switched on and tuned to the channel to be recorded. Three in four households that

have or intend to purchase PVRs or other digital recording devices intend to keep their VCRs for some or all of these purposes.⁸

- 2.26 However, after switchover it will not be possible to use VCRs to record one programme while watching another unless the VCR has an independent digital tuner. According to Ofcom's consumer research, around 25% of VCRs (7.5 million recorders) are used at least once a month for recording TV in this way. If viewers want to retain this functionality they will need to acquire a personal video recorder (PVR) or DVD recorder with a digital tuner.
- 2.27 By the end of 2005, around 1.4 million PVRs had been sold and 2.3 million DVD recorders. However, most of these DVD recorders will not have digital tuners built in. Integrated DVD recorders, which are more similar to a fully digital equivalent of the traditional VCR, are now more common and are available in the high street for under £250. However, most of these currently lack the capacity to record one channel while watching another, which would require either twin tuners in the recorder, or a separate Freeview box or integrated digital TV.
- 2.28 2006 will see increased availability of integrated devices, bringing together the functionality of the digital set box, DVD recorder and PVR. Not only will this integration help reduce the cost of manufacture but will allow manufactures to provide easier to install and easier to use solutions that will be accessible to all sections of the community.

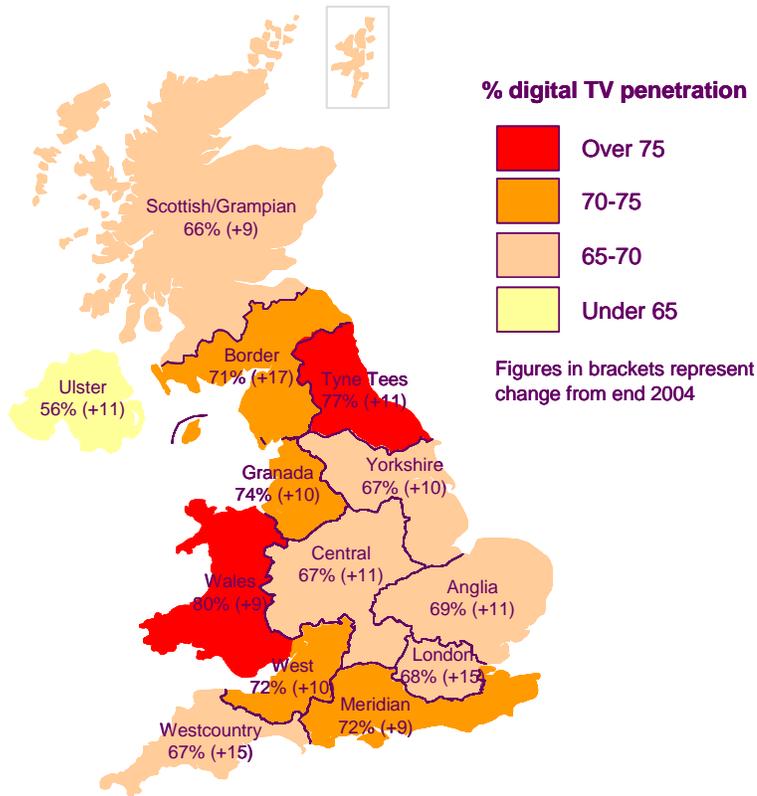
Digital TV penetration varies by region and between demographic groups

- 2.29 There are significant differences in the penetration of digital TV in different parts of the UK. Northern Ireland is the region with lowest take-up, at 56% of households at the end of 2005. Penetration is highest in Wales – the first part of the UK to reach 80% digital take-up – and Tyne Tees (77%). To some extent, these differences can be explained by demographic differences between the nations and regions with regions older and less well-off populations less likely to have taken up digital TV. However, there are also some specific factors at work in particular regions – for example, Wales has above-average digital TV penetration due to poor reception of analogue terrestrial signals in mountainous areas and because of the lack of availability of Channel 4 in analogue terrestrial homes (where the fourth channel is provided by S4C).
- 2.30 Fig 11 shows digital TV penetration in each ITV region, and the change in penetration rate over the past year. It is encouraging for the digital switchover programme that the regions first to switch – Border and Westcountry – saw the highest increases in digital penetration in 2005, up 17 and 15 percentage points respectively.⁹

⁸ Source: The Generics Group

⁹ Note that the methodology used to calculate regional digital TV penetration has changed slightly since 2004 data were reported in *The Communications Market 2005*, due to a lack of detailed regional data for some platforms in 2005. Consequently comparisons are not strictly like-for-like. However we estimate that the differences between the two methodologies only affects the data by $\pm 1\%$ in each region. It is also important to note that the data in this report refer to ITV regions, which are different from the Government regions used elsewhere, e.g. in Ofcom's forthcoming *Communications Market: Nations and Regions* report. For example, the London ITV region covers a wider and more affluent area than the Government region covering London, and as a result digital TV penetration is consistently higher in the London ITV region than in the London Government region.

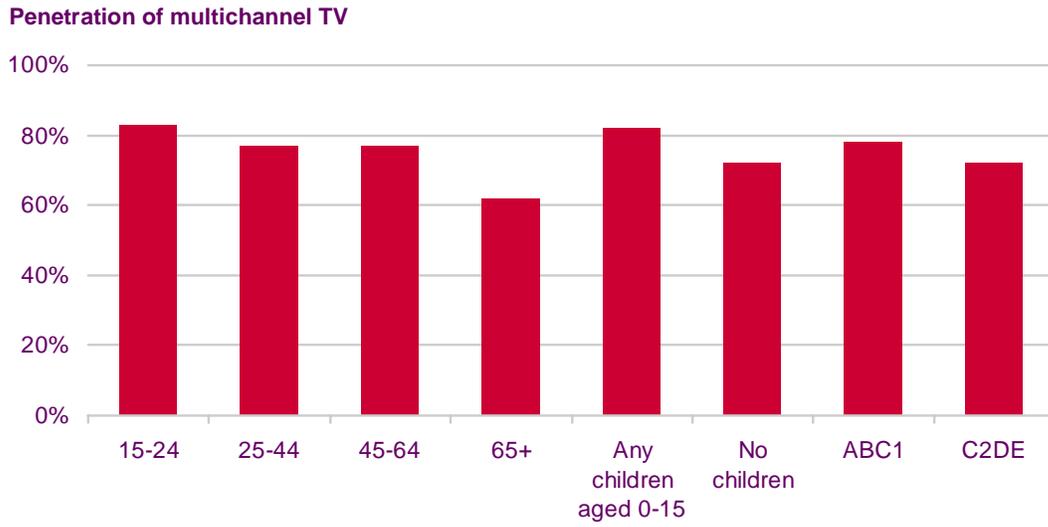
Figure 11. Penetration of digital TV in UK households, by ITV region



Source: Ofcom

2.31 There are also differences in take-up between different demographic groups. Younger people and those with children in the household are most likely to have access to multichannel TV (Fig 12); over 80% of 15-24 year olds have access to a multichannel service, compared to 62% of those aged 65 and over. Adults in social grade ABC1 are also slightly more likely to have multichannel TV (78%, compared to 72% of C2DEs). It is worth noting that the chart below is representative of all individuals aged over 15 years, not households like Fig 1 above. Because technology adoption is almost always higher among larger households, the penetration among individuals is typically several percentage points higher than the homes penetration.

Figure 12. Take-up of multichannel TV by UK adults, by demographic groups



Source: Ofcom Residential Tracker, Q4 2005

Section 3

The digital TV market in the UK

Wide range of digital TV services now available in the UK

- 3.1 Digital TV services are available to viewers in the UK via four main platforms:
- Digital terrestrial television (DTT)
 - Cable
 - Satellite
 - TV over ADSL
- 3.2 All four digital platforms offer a range of digital television and radio channels, as well as access to the main public service channels and digital radio services. Some platforms – particularly cable, broadband and satellite – also offer additional services such as shopping, gaming, and financial services, as well as enhanced interactive and information services.
- 3.3 Fig 13 provides an overview of the main services available on the four major digital platforms, levels of take-up and indicative price points. The satellite and digital terrestrial platforms offer both free-to-air and pay-TV services, while cable and ADSL services are currently only available to subscribers who pay a monthly fee.

Figure 13. Main digital TV services available in the UK, February 2006

Platform	Equipment	Availability	Brand	UK take-up (households)	Penetration	Price range
Satellite	Externally mounted receiver and a set top box	Estimated 95-97% maximum	Pay: Sky Digital	7.7m Q4 2005	30.7%	£15 - £42.50 per month
			Free to view: Sky/Solus	0.6m Q4 2005	2.4%	Sky 'freesat' £150 one-off fee
Cable	Cable connection from network to the home and a set top box	51%	Pay: NTL, Telewest, Wightcable (Analogue & Digital)	3.3m Q4 2005	13.2%	£16 - £51 per month
Digital Terrestrial (DTT - Freeview)	Conventional TV aerial and either a set top box or a TV with a built-in digital tuner	73%	Pay: Top Up TV	Est. 200,000 Q4 2005	0.8%	£7.99 per month
			Free to view: Freeview (DTT-only homes)	6.3m Q3 2005	25.0%	DTT boxes from £30+
TV over ADSL	Using existing telephone lines and set top box.	10%	Pay: HomeChoice, KIT (closing April 2006)	38,000 Q4 2005	0.2%	£15 - £44 per month
Total digital TV penetration of UK households:				71.8% multi-channel 69.4% digital		

Source: Ofcom, platform operators, service providers

- 3.4 Different multichannel services are available in different parts of the UK, depending on the location of digital terrestrial transmitters, line of sight to the satellite and the build-out of cable and ADSL networks. The following sections cover the availability and take-up of each platform in more detail.

Digital satellite

- 3.5 An ITC study in 1999 found that around 98% of UK homes fall within the footprint of the Astra 2A satellite signal and therefore in theory can access digital satellite services via a rooftop dish (Fig 14). Satellite availability is subject to a lack of coverage in areas where a poor line of sight to the satellite exists, which includes mountainous and heavily wooded areas (e.g. Highland Scotland and the north coast of Devon). Satellite coverage can also be limited in built-up areas, where the line of sight to the satellite is obstructed by large office blocks, and in properties (e.g. flats) that do not have a south-facing aspect. The ITC study calculated line of sight between rooftops and the Astra 2a satellite at orbital position 28.2°E for some representative reception areas to estimate overall coverage for the satellite.
- 3.6 However, this estimate does not take into account issues relating to distribution systems in multi-dwelling units, planning or interference issues (which are relatively small). It is difficult to be sure exactly how many households cannot receive satellite services for these reasons, but it is likely that at least 2-3% of homes are affected. It is therefore estimated that a likely maximum of 95-97% of households are able to receive digital satellite services via a dish mounted on their roof.

Figure 14. UK satellite television coverage, February 2006



Source: Ofcom

- 3.7 BSkyB currently offers a variety of television packages, and prices are determined by the 'mixes' of channels that are taken by the consumer and the type of equipment that is installed. The cheapest package currently retails at £7.50 for the first four months of subscription, and £15 per month thereafter, whereas a premium package with Sky+ currently costs £89 for installation, £21.25 per month subscription for the first four months, and £42.50 per month thereafter. Depending on the number of mixes that are adopted, viewers can receive anywhere between 190 and over 300 TV channels and can potentially receive Sky by Broadband services at no extra cost

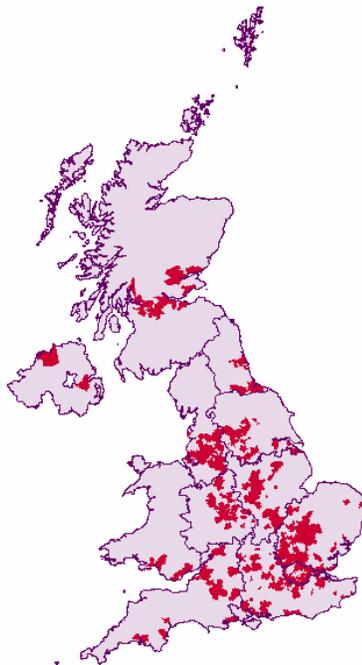
if there is a suitable broadband connection and PC available. Sky also offers a Freesat service, whereby consumers can receive around 120 channels by satellite for a one-off installation cost of £150 and no further subscription fees.

- 3.8 Satellite services, including free-to-view satellite, are received in almost a third of all UK TV homes and 45.7% of all multichannel homes. Sky has a 70% share of the UK pay-TV market. Average revenue per subscriber in the fourth quarter of 2005 was £33 per month.

Digital cable

- 3.9 Digital cable television services are available to an estimated 47% of UK homes, although currently the cable network covers mainly urban areas. This relates to the number of homes that the cable network has been passed and marketed to and therefore should be able to take-up cable services. Fig 15 below shows ntl and Telewest digital cable availability across the UK (shaded in red). Some parts of the cable network are currently analogue and are not depicted in this map. The cable companies are in the process of upgrading these parts of the network – which include around 18% of cable customers – to digital; this process is expected to be completed by the end of 2006.

Figure 15. Digital cable coverage by ntl and Telewest, January 2006



Source: Ofcom, network operators

Note: This map does not depict Wight Cable, which offers cable coverage in Scotland, Borders, the North West and the Isle of Wight

- 3.10 In March 2006, NTL and Telewest completed their merger. The combined company, renamed NTL Incorporated, now passes more than 12 million homes (around 50% of all UK households) and offers both separate and triple play packages, comprising of telephone, television and broadband services. Some of the cheapest deals start at £16 per month for a free set top box offering around 40 digital TV and radio channels and interactive services, through to a premium 'family pack' that provides 160 digital

TV and radio channels for a monthly cost of around £30. A smaller cable company, Wight Cable, also offers cable TV services to around 8,000 subscribers in Scotland, Border, North West, and the Isle of Wight.

- 3.11 Digital cable TV is present in 10.8% of all TV homes, with analogue cable serving a further 2.4% of TV homes. Digital and analogue cable combined account for 18.3% of all multichannel TV homes and 30.1% of pay-TV homes. On average, cable subscribers say they spend £24 on their pay-TV subscription each month, although for double- or triple-play customers it may be difficult to say what proportion of their monthly bill can be allocated to TV services, and how much to telephony or Internet access.

Digital terrestrial television

- 3.12 Digital terrestrial services are currently available to an average of 73% of UK homes – Fig 16 provides an overview of coverage.

Figure 16. Coverage of digital terrestrial television services, February 2006



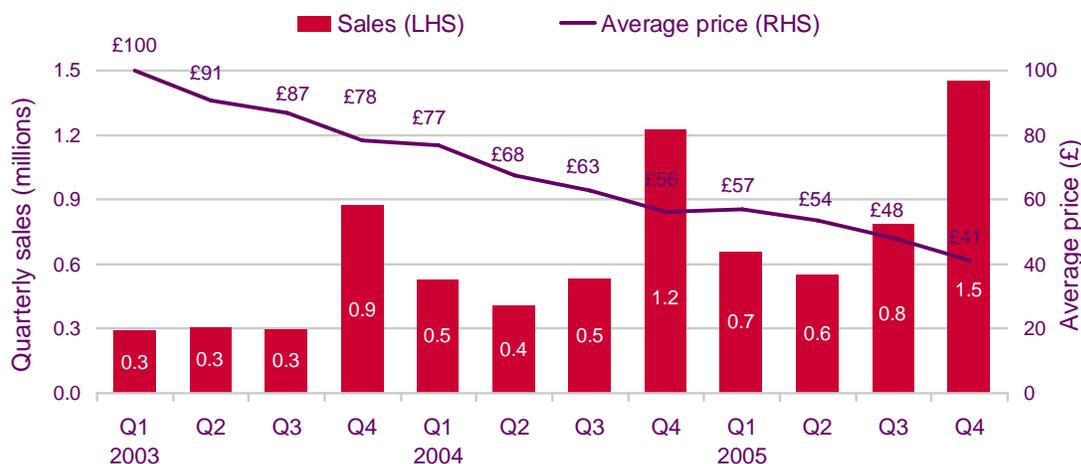
Source: Ofcom

- 3.13 The 73% figure is a theoretical one derived from computer modelling. The country is divided into 100m squares and the square is deemed covered if 90% of locations within that square can receive a usable signal for 99% of the time, using a standard aerial correctly pointed at the transmitter. The 73% figure is therefore for UK homes that should be able to receive all 6 multiplexes, meaning the number of homes that can receive one or more but less than 6 multiplexes would be higher than this. DTT coverage can vary across the UK and within regions depending on the location of homes and the current aerial equipment being used.
- 3.14 Parts of the UK, predominantly rural areas, are currently unable to receive DTT. The map in Fig 16 shows the gaps in current coverage which cannot be filled unless new transmitters are converted to digital and the power levels of the signal are increased,

both of which depend on digital switchover. Specific DTT coverage problems exist in the Highlands and Islands of Scotland, the Borders region and other upland areas in England and Wales. In Northern Ireland, only three transmitters - Divis, Limavady and Brougher Mountains - broadcast the DTT signal, limiting its coverage and DTT take-up significantly.

- 3.15 DTT coverage will increase as the digital switchover process begins. Switchover enables the power of digital transmissions to be increased, and more transmitters to be converted to digital broadcasts. After switchover, it is intended that the PSB multiplexes should cover 98.5% of UK households, matching current analogue terrestrial coverage.
- 3.16 More than 10.5 million Freeview boxes and integrated digital TVs had been sold by the end of 2005, with a little over 30% of them estimated to be in households already receiving digital TV.¹⁰ In addition, a number of Freeview boxes are expected to be inactive, possibly because they have been replaced with a more recent box or an alternative service, or because of problems with signal reception, or because the box is otherwise not needed. We therefore estimate that the total number of homes using digital terrestrial television as their only digital platform was around 6.5 million by the end of 2005.
- 3.17 Sales of Freeview boxes have been increasing as prices have fallen. The average price paid for a Freeview box is now £41, and prices have more than halved since mid-2003 (Fig 17).

Figure 17. Quarterly sales and average prices paid for Freeview boxes¹¹



Source: GfK

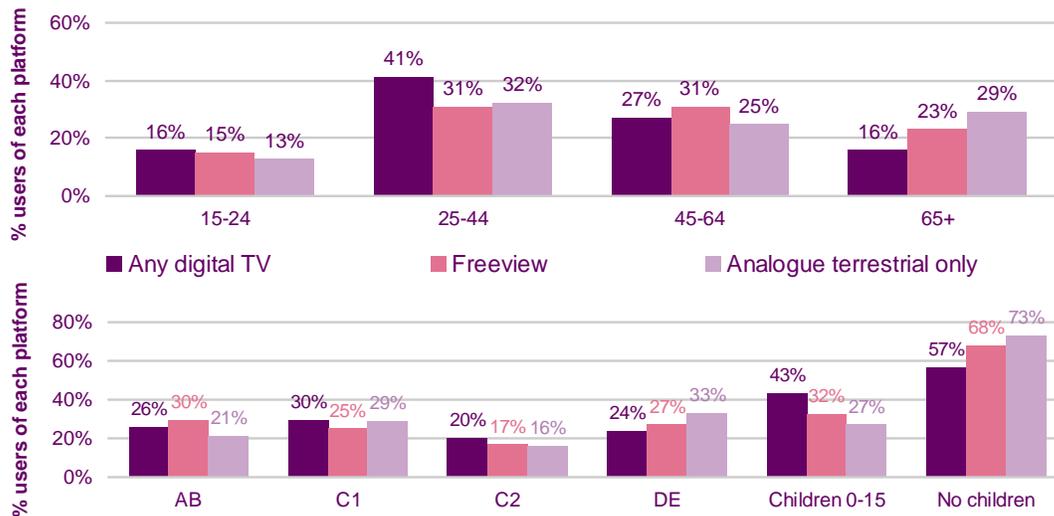
Note: excludes boxes sold in Northern Ireland

- 3.18 Freeview viewers tend to be older than cable or satellite subscribers, and include a higher proportion of AB social grade viewers. They are more likely to have children in the household than analogue terrestrial viewers, but less likely than cable or satellite subscribers (Fig 18).

¹⁰ Source: GfK, Q3 2005

¹¹ Excludes Freeview boxes with PVR functionality

Figure 18. Demographic profile of all digital TV viewers, Freeview viewers and analogue terrestrial-only viewers

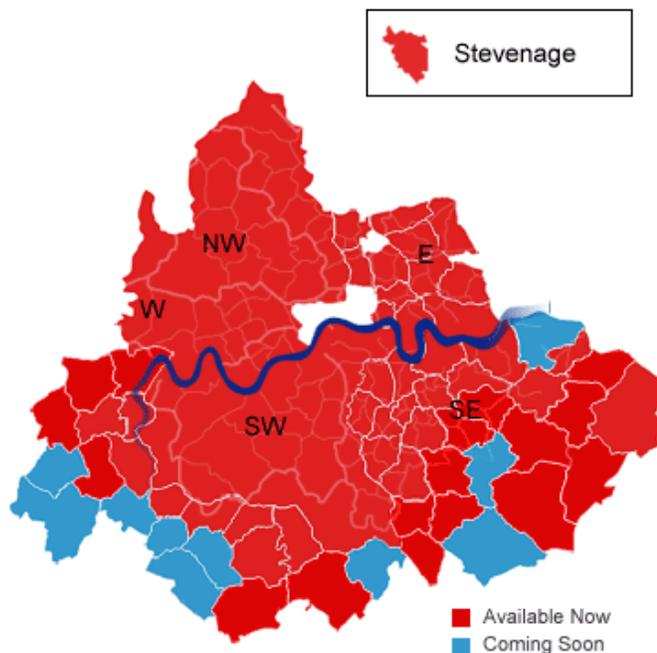


Source: Ofcom Residential Tracker Q3 2005
 Base: All respondents (2,220 adults aged 15+)

Television over ADSL

- 3.19 Television over ADSL is currently a relatively small player in the digital TV market. Around 2.5 million homes in the UK have been passed for TV over ADSL services, equivalent to 10% of UK homes or 12% of homes in England.
- 3.20 TV over ADSL is currently only available as an independent service in two regions of the UK. HomeChoice offers the service in the London area and has now passed 2.4m homes for the service. The last reported take-up of the HomeChoice service was 34,000 subscribers as at September 2005. Meanwhile Kingston Interactive Television (KIT) is available to 105,000 homes in the Hull area of East Yorkshire. However, Kingston has indicated its intention to close its TV business in April 2006, citing anticipated increased competition in the digital TV market. Take-up of KIT is around 4,200 homes at present.
- 3.21 Notwithstanding the closure of KIT, unless another provider takes over the service, TV over ADSL is expected to become more significant in 2006 as companies including BT launch services later in the year (see below). Sky has already launched 'Sky by Broadband', a movie download service for existing subscribers. The cable companies are also believed to be considering ADSL as a way of extending their current network coverage. With broadband subscribers in the UK approaching 8m at June 2005, and ADSL expected to be available to over 99% of homes shortly, there is significant scope for TV services in this area. ADSL could therefore offer an alternative in areas of the country where the current platforms have not yet achieved full coverage. ADSL could also be a suitable platform to offer new services such as high definition television.
- 3.22 Fig 19 indicates the current coverage for HomeChoice's ADSL service in the London area, covering 2.4 million homes.

Figure 19. HomeChoice ADSL coverage in the London area, February 2006



Source: HomeChoice

New products and services on the way

- 3.23 Recent announcements by a number of platform operators and broadcasters indicate that 2006 will see the launch of a range of new technologies and services that promise to extend the functionality and choice of the digital TV solutions available to consumers.
- 3.24 Many of these new deployments will exploit the latest digital compression technologies and a continued reduction in manufacturing costs to meet a growing consumer demand for greater choice in how and when television is viewed. Increased integration of previously separate device, such as DVD recorders and digital set-top boxes will reduce the complexity of in-home installations and simplify their ease of use, thereby reducing the risk of alienating sectors of society from the digital switch over process.
- 3.25 As well as providing alternative solutions for those households that have yet to convert to digital the enhanced functionality offered by these new digital services will appeal to existing digital homes. These develops have the potential to encourage equipment and service upgrades, thereby freeing up digital equipment currently used on primary television sets so that is can be used to convert second and third sets. Continued innovation in digital TV technologies and services, combined with the reducing cost of consumer reception equipment, provide dual incentives to help drive digital adoption on all sets within the home.

High Definition TV

- 3.26 By the end of 2005, both Sky and Telewest had announced plans to launch High Definition Television (HDTV) services in 2006. As its name suggests, HDTV offers the TV viewer improved picture quality by increasing the resolution of the image displayed on the screen. This results in clearer and sharper images which should

offer a significant improvement over current standard definition television, especially on larger screens.

- 3.27 Telewest was the first provider to reach the market with an HDTV service – TV Drive – which launched in March 2006, following trials in late 2005. The service is available to all 4.5 million homes in Telewest’s service area, for £10 per month for premium subscribers or £15 per month for subscribers to Telewest’s Starter or Essential packs. The service requires a new set-top box incorporating a personal video recorder (PVR), which is provided at no cost to new Telewest customers or to existing customers who keep their current set-top box for use in another room (for an additional £5 per month). There is a £50 installation charge for customers who wish to swap out their existing set-top box for a TV Drive.
- 3.28 TV Drive has a triple tuner, enabling viewers to record two programmes while watching a third, and a 160GB hard drive that allows up to 80 hours of standard definition TV to be recorded (or an estimated 20 hours of high definition TV). At launch, a limited amount of BBC Worldwide programming was available in HD through Telewest’s on-demand video service, but the company has said that it intends to add more content over the course of 2006.
- 3.29 Reception of Sky’s HD services will also require a new set-top box including Sky+ PVR functionality as a standard feature. It is expected that Sky homes upgrading to HD will also have the option to move their existing set-top box to another room using Sky’s “Multiroom” service which provides access to the customer’s existing subscription package on a second set for a discounted fee.
- 3.30 Sky have announced that from launch HD content will be available on a number of channels, including Sky Sports and Sky Movies as well as content from National Geographic and Artsworld.
- 3.31 Whilst the BBC and ITV have expressed an interest in conducting trials of HD broadcasting on various digital platforms they have not announced firm plans to launch a full service as yet. However, the BBC is believed to be keen to make highlights of its schedule available to digital and cable viewers where practicable, with technical trials planned in London in 2006. Subject to the terms of its new Charter, the BBC has said that it aims to produce all its output in HD format by 2010.
- 3.32 To benefit fully from the improved picture quality of HD, consumers will require an “HD Ready” display. Typically based on high resolution LCD or Plasma technologies, these displays support new digital interfaces that simplify connection to other equipment and ensure the quality of the picture is maintained. It is estimated that by the end of 2005 700,000 households owned a “HD Ready” display and that this number will increase by a further 2 million during 2006.

Freesat

- 3.33 In 2005 ITV announced that it intended to collaborate with the BBC and the consumer electronics industry to develop a “Freesat” service that would provide a similar service via digital satellite that is already available through Freeview on digital terrestrial TV. At the time of the announcement, it was indicated that reception equipment would be available via retail outlets during 2006, providing consumers with an alternative to the “freesat from Sky” offer already available from BSkyB. However, at the time of writing, no such service had been launched.

- 3.34 It is expected that, as with Freeview, receiver manufacturers will be able to develop products with additional functionality to that which is specified in the base line Freesat specification. This ability to innovate around the core specification and the resulting competition between manufacturers promises to provide consumers greater choice of functionality and price points. It is likely that subscription free PVR products, similar to those already available on Freeview, will be available without the need to for a monthly subscription.
- 3.35 The Freesat solution could also help drive conversion of second and third TV sets in existing Sky DTH homes, providing access to free to air digital satellite channels without the need for an incremental Sky subscription.

TV over broadband

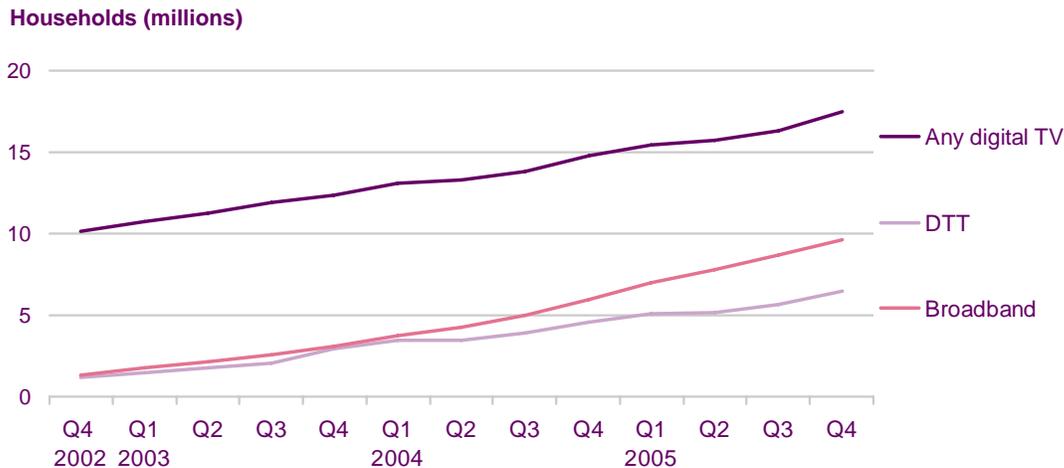
- 3.36 In January 2006 Sky launched its “Sky by Broadband” service that provides existing subscribers to Sky premium sports and movies packages access to additional content via broadband to their PC for no extra cost.
- 3.37 The technology solution utilises “peer to peer” file sharing technology which provides a low cost, scalable solution for the distribution of digital content. The use of Microsoft’s Digital Rights Management technology prevents unauthorised copying and controls how long the users are able to view the content before it expires.
- 3.38 The Sky by Broadband service uses similar technology to that which is being trialled by the BBC for its interactive Media Player service (iMP) which allows viewers to “catch up” on TV programs they have missed over the last 7 days by downloading them to their PC.
- 3.39 Whilst the current Sky and BBC services are optimised for content which is downloaded before it is viewed there are a number of new Internet-based content aggregators which provide the infrastructure to allow TV content to be streamed to viewers in real time and that allow a large number of users to view the same content simultaneously (in a way that is analogous to traditional broadcasting). The BBC, ITV and Channel 4 have expressed a desire to make their broadcast channels available via the internet and continual technology improvements will make the quality of these services and the cost of distribution increasingly attractive for both the broadcasters and consumers.
- 3.40 Up till now, these types of streamed and download-based broadband services have typically been viewed by users on their computer screen. However, the increased adoption of in-home wireless networks and set top boxes which allow PC content to be viewed on the TV means that viewing these types of services on the TV may become increasingly common.

Sky and Easynet

- 3.41 The technology to deliver digital TV and advanced on demand and interactive services via ADSL connections has been available for many years. Both HomeChoice in London and KIT in Hull already offer a full range of digital TV services over the local loop. However, the delivery of audio-visual content via ADSL has become more commercially attractive with the recent reduction in access charges to the BT local loop, improvements in digital compression technologies and reductions in computer processing and memory costs. The market is expected to see significant new entrants in 2006 – BSKyB, BT and Wanadoo have already announced plans to deliver TV via ADSL and other companies are expected to enter the market.

- 3.42 The recent acquisition of the internet service provider Easynet by BSkyB has provided the satellite broadcaster access to over 232 unbundled BT exchanges, with further investment planned to extend this further. In its simplest form the acquisition allows Sky to compete with cable operators to offer the “triple play” of digital TV, Internet access and telephone services. But the potential to deliver on-demand video content and sophisticated interactive services to a television set-top box via the broadband connection could provide new innovation, choice and control for consumers and provide access to digital TV to those homes which are currently unable to access it through any other platform.
- 3.43 BT is also planning to offer access to digital TV to its broadband customers in 2006 by offering a digital terrestrial set top box which is also able to access video content via broadband. With broadband penetration in the UK exceeding that of Freeview (Fig 20) the availability of additional TV content via broadband will give large numbers of consumers the opportunity to equip their TVs with these new hybrid broadcast and broadband devices.

Figure 20. Household take-up of digital TV, DTT and broadband



Source: Ofcom

Improved compression technologies

- 3.44 Many of the service innovations planned for 2006 have been made possible by new video compression technologies such as MPEG4. By compressing the information within a TV signal more effectively, less network capacity is required to transmit them. In the case of traditional broadcast networks this improves the economics of transmitting bandwidth-hungry HDTV services and in the case of bandwidth-limited DSL connections it allows standard definition TV services to be delivered over a 2mbps broadband link.
- 3.45 MPEG4 also reduces the storage capacity required within hard disk based devices – improving the viability of mobile “TV 2 Go” devices which allow users to take recorded content with them in a similar way that the iPod does for music.

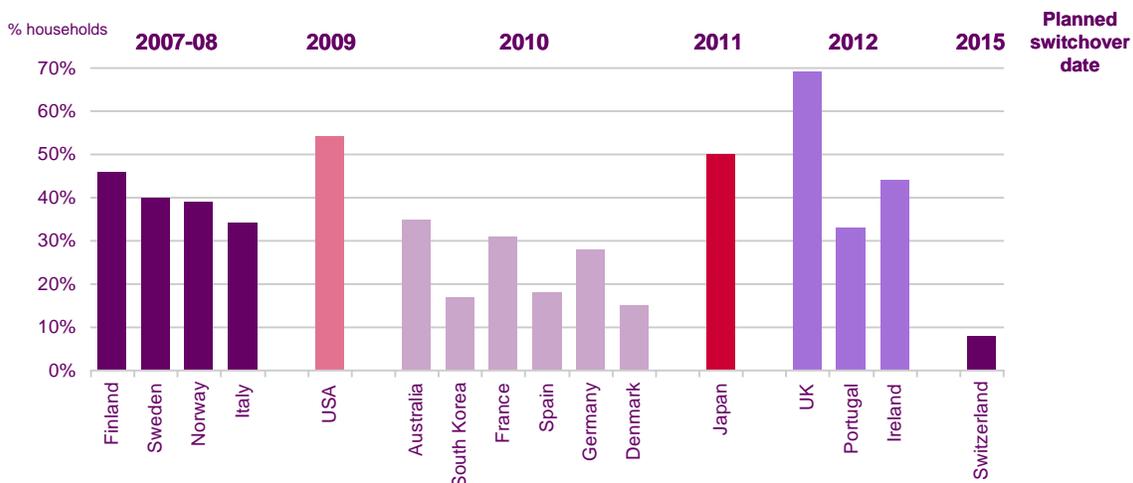
Section 4

Digital switchover in the UK and abroad

International take-up rates

- 4.46 Digital television is now making a strong impact in a number of countries across the world. It is thought that over 30 million households worldwide adopted digital television in the course of 2005, meaning that 13% of all TV households now receive some form of digital television. Of these, only 2% are digital terrestrial households. Nevertheless, it is expected that in the next five years, the number of digital terrestrial households is expected to double and its growth will be particularly evident in those countries with historically lower penetration of cable and satellite TV. It is expected that, by the end of 2010, the total number of worldwide digital households will increase to over 30%, meaning that nearly 250 million households will adopt some form of digital television in the next five years.
- 4.47 At nearly 70% of all households at the end of 2005, the UK has the highest digital television penetration in the world, followed by the USA with nearly 55% digital households (Fig 21). Western European countries have an average of around 30% digital households, yet several of these countries are scheduled to complete the transition to digital even before the UK's Border region commences in 2008. This can be explained by the fact that, in most of the other countries, there is typically a high penetration of free or relatively cheap cable and satellite television services (largely analogue), with the result that there is less reliance on the terrestrial broadcast network. Consequently, the transition in these countries is more focused on the conversion to multichannel rather than to digital, and in many countries multichannel penetration is already significantly higher than in the UK. The UK will probably be one of the first countries with a high reliance on terrestrial television to commence switchover.

Figure 21. International household penetration of digital TV and switchover plans



Source: national regulatory authorities, Informa Media, Screen Digest

The UK Digital Switchover Programme

- 4.48 Since the concept of digital switchover in the UK was first discussed by Ministers in 1999, several milestones have shaped its progress. The Communications Act 2003 anticipated the digital switchover process, established Ofcom as a merger of five previous communications regulators, and required Ofcom to replace the commercial broadcasters' analogue licence with new digital licences by the end of 2004.
- 4.49 In April 2004, Ofcom published a report at the request of the Secretary of State on progress towards digital switchover, which made thirty recommendations to realise switchover. Among these, it was recommended that a firm timetable of analogue switch-off should be announced, and that a body should be established to be responsible for the delivery of switchover by a specified date.
- 4.50 Simultaneously, Ofcom was beginning to consult extensively with industry and at the end of 2004 issued digital replacement licences to ITV, Channel 4, Five and Teletext, requiring them to cease analogue transmission in accordance with a timetable which was later confirmed by the Secretary of State in September 2005 (Fig 22). At the same time, the Government was in the process of reviewing the Royal Charter of the BBC, which expires at the end of 2006. In its consultation paper on the BBC's new charter, the Government made it clear that the BBC is expected to play a leading role in the switchover process, including conforming to the same switchover timetable as the commercial terrestrial broadcasters. The White Paper on the future of the BBC, published in March 2006, gave final legal confirmation of this role for the BBC.

Figure 22. UK regional digital switchover plan



Source: Department for Culture Media and Sport

- 4.51 Responsibility for delivering digital switchover has always ultimately been the joint responsibility of the DCMS and DTI, although the multi-dimensional nature of the programme means that responsibility has been divided between several bodies. Following Ofcom's proposal to establish a new organisation to manage the

switchover process, the independent, privately-owned but not-for-profit company Digital UK was officially launched in September 2005. It has been set up by the UK's public service broadcasters and digital terrestrial multiplex operators. Its three primary objectives are:

- to coordinate the technical roll-out of digital terrestrial television (DTT) across the UK, ITV region by ITV region, to the timetable set by Government;
- to communicate with the public about digital switchover to ensure everyone knows what is happening, what they need to do and when; and
- to liaise with TV equipment manufacturers, retailers, digital platform operators, consumer groups and other relevant stakeholders to ensure understanding of and support for switchover.

4.52 Digital UK is responsible for managing the switchover programme with input from Ofcom, Government, and other stakeholders with an interest in the process. The programme consists of a series of workstreams which are designed to:

- Provide a pragmatic approach to switchover coordination which puts consumers first;
- Facilitate effective coordination between DCMS, DTI, Digital UK and Ofcom;
- Create clarity of responsibility for the different areas of switchover;
- Create a structure which can be coordinated by a single project manager who is in a position to assess and manage interdependencies between workstreams.

4.53 Digital UK will commence communication of the digital switchover programme in 2006, including a national advertising campaign, on-air advertising, direct marketing, help-lines and clear product labelling. Digital switchover will be announced in each ITV region at least three years in advance of the date of switchover, and there will be further communications two years in advance of switchover, with more detailed information being provided as the date for switchover advances.

Most European countries seek to complete switchover by 2012

4.54 By February 2006, nearly all European Member States had announced a target switchover date. Although the European Union has no legal powers to compel switchover, the publication of various official Communications has led to the emergence of an informal agreement by the majority of EU countries to try to complete switchover by 2012. Below is a brief summary of switchover developments and plans in major markets around the world.

4.55 Eight years ago the **German** government set a deadline for the nationwide conversion to digital by 2010. High cable and satellite penetration means that less than 5% of German homes rely exclusively on analogue terrestrial transmissions (rising to around 12% if secondary sets are included). Therefore, digital terrestrial switchover represents much less of a social and logistical challenge in Germany than it does in some other TV markets such as the UK or France. Nevertheless, the process has been conducted very carefully in the recognition that this transition represents an international precedent and will help shape digital switchover programmes in other regions and countries.

- 4.56 In August 2003, the Berlin-Brandenburg region in Germany was the first example of analogue switch-off anywhere in the world. Despite the existence of some initial doubts, free-to-air set-top boxes sold out within weeks (even though they retailed at around £150) and the transition has been heralded as a resounding success. Having been achieved in just nine months, Berlin's transition has accelerated the timetable for Germany's other Länder, resulting in analogue switch-off already across around 50% of the German population. Consequently, the entire switchover process is expected to be completed by 2008, two years ahead of the previously envisaged deadline.
- 4.57 Much of Berlin's switchover success can be attributed to the staggered channel switchover programme, whereby its analogue terrestrial channels were switched off in two stages. Firstly, the commercial channels were switched off, followed by the analogue terrestrial PSB channels 6 months later (this period was reduced to 3 months for subsequent regions). This approach allowed viewers to check that they were appropriately equipped to receive digital terrestrial transmissions before full switchover; the UK will be adopting a similar approach, with changes taking place over a number of weeks. Another defining feature of the German approach to switchover is the multi-platform approach to universal coverage, meaning that the provision of digital terrestrial television is not crucial in areas where cable and satellite transmission is available.
- 4.58 As in Germany, progress towards digital switchover in **Sweden** has also been significant. At the end of 2005, Sweden had completed 'Phase 1' of switchover and converted to digital terrestrial transmissions in 3 areas, meaning that around 5% of the population had switched exclusively to digital television. The second phase of Sweden's digital switchover process began in February 2006 switching off the analogue signal of a further 20% of households. The process in Sweden will continue in a phased roll-out by region, taking two and a half years in total, with completion expected by 1st March 2008.
- 4.59 As in Germany, the Swedish broadcasting landscape is rather different to the UK's, with a very high multichannel penetration (50% cable, 17% satellite, 11% DTT) and a successful pay-DTT service. Consequently, the transition is unlikely to have significant repercussions for the majority of households. Nevertheless, both countries have placed a great emphasis on engaging local media and consumers in the months prior to switchover, and have successfully coordinated switchover between the relevant parties. The Swedish approach to switchover has been unique to some extent, in that the policy has been managed by a Government-led body, and that satellite broadcasts will be relied upon by around 5% of the population once switchover is achieved.
- 4.60 **Italy** has approached the roll-out of DTT vigorously, launching five multiplexes within a few months in late 2003/early 2004 and driving take-up of what is otherwise a free-to-air service with a football and movie-based pay-per-view service. In April 2005, the Government's Communications Minister confirmed that Italy's analogue broadcasts would be switched off by the end of 2006. However, at the beginning of 2006, this date was changed to the end of 2008 'in order to fall into line with European Union decisions.'¹² Nonetheless, the Italian Government remains optimistic that the transition will be completed before 31st July 2006 because the work programme to achieve switchover will remain unchanged despite the revised date. Regardless of this continued determination, some industry commentators perceive the Italian switchover timetable as ambitious and have questioned whether the proposed

¹² <http://www.comunicazioni.it/en/index.php?ldPag=4&ldCom=538&Anno=2005&Mese=&Blk>

timetable will be achieved. At the end of 2005, it was estimated that around 15% of the country were DTT viewers.

- 4.61 **Finland's** broadcast market structure shares many similarities with the UK's, particularly the relatively modest level of cable and satellite homes compared to other Member States. It launched a full DTT service in 2001 and at the end of 2005, 34% of households received digital terrestrial television. The Finnish public broadcaster YLE has played a pivotal role in the DTT sector, beginning the first DTT trials in 1997 and subsequently forming Digita which is now the DTT platform operator. This platform has been increasingly important in catalysing digital take-up in Finland, and will play a pivotal role in reaching the government's switchover deadline of August 2007. Since Finland's total digital penetration currently stands at around 46%, some industry experts have questioned whether this deadline is achievable, and have speculated that a revised timetable may be adopted in the future.
- 4.62 Digital terrestrial television launched in **France** in March 2005 and it is estimated that over 1.7 million set-top boxes had been sold by the end of 2005. Experts predict that over 2.5 million homes will be DTT-only by 2010, helped by the widely available low-priced adapters and high-profile publicity drive. The French Government has set a switchover date of 31st March 2010, but it is possible that this may be delayed in order to coordinate with the end date of the current analogue broadcast licences – which expire at the end of 2011.
- 4.63 After the first **Spanish** digital terrestrial platform closed in 2002 because of insufficient viewers, a new digital free-to-air terrestrial platform was launched at the end of 2005. Around 20% of Spanish TV households are estimated to now receive some form of digital television, of which 4% is attributed to the digital terrestrial television platform. The Spanish government has set a switchover date for terrestrial broadcasts of April 2010, at a time when it is predicted that nearly 50% of all households will receive digital television.
- 4.64 Nearly 70% of all TV households in **the USA** have cable television, around one third of which are digital connections. With nearly a further 20% of households receiving DTH television, only around 10% of households rely on analogue terrestrial broadcasts. Consequently, the US Government initially aimed to accelerate the transition to digital with a switchover date of the end of 2006. However, DTT has developed rather more slowly than originally anticipated, with around 15 million DTT set-top boxes sold to date. Consequently, in December 2005, the US Senate agreed a Bill which proposed an analogue switch-off date of 17th February 2009. This date was subsequently agreed by Congress and signed by the US President in February 2006. It is intended that the released spectrum will be auctioned in January 2008, for a minimum of \$5 billion (£2.9 billion), with the proceeds used to create a 'Digital Transition and Public Safety' fund. Some of this fund has been earmarked for the provision of two vouchers worth \$40 (£23) each for every US household to assist in purchasing digital receiver equipment.
- 4.65 Even before DTT services had been launched in 2003, the **Japanese** government announced a switchover date of 24 July 2011. Since then, DTT penetration has reached 12% of a total of around 24% digital households. An interesting feature of the Japanese approach to switchover is that all platforms will be switched over simultaneously. This approach has enabled the Government to rearrange the analogue frequencies so that analogue can simply be turned off nationwide on the specified date, rather than adopting a region-by-region timetable.

- 4.66 The interested parties in the digital transition have created a 'National Conference for the Promotion of Terrestrial Digital Broadcasting' which has subsequently instructed a non profit making body to administer the transition, responsible for running a call centre and appropriately informing consumers about the analogue switch-off.
- 4.67 Since 2004, significant progress has been made towards the switch to digital in **Australia**. Pay-TV revenues have continued to grow in the last few years, largely as a result of hard marketing drives by the cable and DTH platform operators, and total digital TV households represented around 40% of total households. At launch, consumer take-up of DTT was initially slow, but cuts in the retail prices of DTT set top boxes has subsequently fuelled interest and increased penetration to over 15% of households. Furthermore, in the last year, the broadcasters ABC and Seven have launched digital-only channels, a strategy similar to that adopted by the BBC in the UK.
- 4.68 A report by a Parliamentary committee published in February 2006 examined the take-up of digital TV in Australia and proposed that digital switchover be delayed until January 2010. The report said that digital take-up had been slow because viewers were not convinced they would get value for money and there had been problems with some equipment and receivers. On 14 March 2006, the Australian Communications Minister formally responded to the report's recommendations by publishing a report titled *Meeting the Digital Challenge: Reforming Australia's media in the digital age*. This paper has suggested that the switchover timetable should be changed, and has proposed to set a rolling switchover plan beginning in Australia's big cities from 2010. At the time of writing, the report was subject to consultation with stakeholders and it was expected that any changes would be passed through Parliament by the end of 2006.
- 4.69 The **Canadian** regulator, CRTC, has announced that there will not be a government-imposed switchover date in Canada (although it is expected to occur sometime after 2010). Currently around one-fifth of Canadian homes can receive a digital terrestrial signal and, because of the existing high cable penetration, there is a comparable lack of momentum to switch to digital-only terrestrial broadcasts.

European Commission clarifies state aid rules with respect to switchover

- 4.70 The European Commission has taken a leading role in encouraging coordination of digital switchover, although it has not sought to impose a deadline for switchover. However, it has also been careful to enforce principles of platform neutrality and to monitor any potentially inappropriate state aid.
- 4.71 State aid exists where certain companies receive preferential treatment from the state (usually in the form of grants, tax relief or advantageous terms of trade) which distorts competition and affects trade within the EU. The aid is unlawful if it is not notified to, and approved by, the Commission. While the Commission recognises that digital switchover programmes may be delayed if the transition is left entirely to market forces, to be approved any state aid must fulfil all the requirements set out by the Commission. In relation to DSO in particular it must be shown to be proportionate, transparent, necessary and technologically neutral – in that any subsidy cannot favour unduly a particular delivery platform. While some ambiguity has surrounded the practicalities of state aid in this area in recent years, a few recent decisions by the Commission have served to enhance the legal certainty for future possible public policy interventions in the forthcoming EU-wide transition to digital. In 2004, the European Commission launched two separate, but similar, state aid

investigations into the financing of DTT networks in Germany and Sweden, the former of which has now been concluded.

- 4.72 In the **German** case, the local Media Authority compensated the private broadcasters by providing a subsidy in order to promote the introduction and roll-out of DTT in Berlin-Brandenburg. In its ruling in November 2005, the Commission ordered commercial stations to pay back subsidies that they had received for committing themselves to the DTT platform for a period of five years. The Commission stressed that it was firmly committed to encouraging the transition to digital TV, but was simultaneously obliged to ensure that state support must be based on objective criteria and avoid distorting competition. In its statement, the Commission recognised that the switch to digital may be delayed if it is left entirely to market forces and that public intervention (such as regulation, financial support to consumers, and information campaigns to ensure social or regional cohesion) can be beneficial. This investigation has been closely observed throughout Europe, and the decision has reinforced that the onus is on Member States to demonstrate that aid is the most appropriate instrument, that it is limited to the minimum necessary and does not unduly distort competition.
- 4.73 The Commission's other investigation is into the financing of switchover in **Sweden**, which at the time of writing is still ongoing. The Swedish DTT network is operated by the state-owned Teracom AB, and the Swedish public broadcaster SVT is legally obliged to use the Teracom network. Naturally, SVT is required to pay Teracom a fee for the transmission of its television programmes; however it was considered that the total payments made were higher than the cost of transmission. Consequently, the European Commission is concerned that Teracom could have been indirectly aided by payments made by SVT, while the Swedish authorities may have directly granted guarantees and provided a capital injection to Teracom.
- 4.74 At the end of 2005, the European Commission also launched an investigation into subsidies provided for digital decoders by **Italy** in 2004 and 2005. In opening its inquiry, the Commission stated that 'the subsidy is not technology-neutral because although it is also offered for decoders using cable technology, it is not available for decoders using satellite broadcasting.¹³ This investigation is ongoing.
- 4.75 In another case, the European Commission approved state aid disbursed to aid the transition to digital. In March 2005, the Commission approved various forms of public intervention in support of digital terrestrial TV in **Austria** – including subsidies for the purchase of set-top boxes of any platform to prevent the exclusion of low-income households from access to TV, and grants to companies to develop innovative digital services. These measures were approved because they respected the European Commission's principles of transparency, necessity, proportionality and technological neutrality.

¹³ European Commission IP/05/0657

Annex 1

Digital TV take-up: platform details

Digital satellite – pay TV households

- A1.1 BSkyB’s pay-TV subscriber base increased by 194,000 net additions during the quarter to reach 7,666,000 subscribers in the UK. In the year 2005 BSkyB has added 404,000 UK subscribers.
- A1.2 Annualised average revenue per user (ARPU) for the quarter was £397 up from £385 in Q4 2005. Churn decreased during the quarter from 11.7% to 10.6%.

	Pay digital satellite	
	Q3, 2005	Q4, 2005
Pay-TV households	7,472,000 ¹⁴	7,666,000 ¹⁵
ARPU (annualised)	£385	£397
Churn	11.7%	10.6%
Basic package price	£15.00	£15.00

Source: BSkyB Q4 2005 results

Digital satellite – free-to-view households

- A1.3 **Sky churners / free-satellite viewers:** Of the viewers that have churned-off Sky subscription services an estimated 450,000 still use their set top box to receive all of the free-to-view public service channels. Figures for the number of viewers who have taken up Sky’s free satellite service are not in the public domain.
- A1.4 **Solus viewers:** Around 145,000 viewers are estimated to have acquired Solus cards in order to gain access to free-to-view channels on satellite. This scheme was operated by Channel 4 until January 2004 and previously by the BBC.

	Free-to-view digital satellite	
	Q3, 2005	Q4, 2005
Free-to-view households	545,000	595,000

Source: BSkyB, Channel 4, and Ofcom market estimates

¹⁴ These figures are for the UK and exclude BSkyB’s subscribers in the Republic of Ireland.

Cable

A1.5 By 31 December 2005, the total number of UK cable households was 3,310,400.¹⁵ Of these, 1,942,800 subscribed to ntl and 1,367,600 to Telewest Broadband.

A1.6 Telewest Broadband showed a net increase of 19,028 subscribers over the quarter, with 42,636 digital subscribers added. Ntl saw an overall net increase of 2,800 TV subscribers, and increased its digital subscriber base by 35,800.

A1.7 The cable industry as a whole saw an overall increase in total TV subscribers of 13,403. The number of digital cable subscribers increased by 71,165, reaching 2,715,900 by the end of Q4 2005 – an increase of 2.7% from Q3 2005.

	ntl		Telewest Broadband	
	Q3, 2005	Q4, 2005	Q3, 2005	Q4, 2005
Homes marketable on-net	7,935,800	7,735,900	7,698,100	4,700,800
Total residential subscribers (TV, telephony, internet)	3,097,300	3,089,800	1,848,100	1,868,200
Total TV homes connected	1,940,000	1,942,800	1,348,572	1,367,600
Digital TV homes connected	1,409,300	1,445,100	1,228,164	1,270,800
TV penetration rate	24.4%	25.1%	28.7%	29.1%
ARPU (annualised)	£468.96	£467.76	£542.04	£542.04
Churn rate (annualised) ¹⁶	20.4%	19.2%	16.8%	14.4%
Basic package price	£21.50	£16.00	£16.00	£16.00

Source: Telewest Broadband and ntl Q4 2005 results

Digital Terrestrial Television (DTT) sales

A1.8 DTT showed another strong quarter, with a total of 1,929,800 DTT boxes and IDTVs sold during Q4. This exceeded the corresponding quarter for 2004 when 1,449,000 sales were added. The estimated total number of DTT units in the market is now over 10.8 million, including ITV Digital legacy boxes. Note: around one million of these boxes may be currently in-active.

Quarterly DTT sales	DTT sales	
	Q3, 2005	Q4, 2005
Freeview set top boxes	826,300	1,527,600
IDTV's	196,000	402,200
Total sales	1,022,300	1,929,800

Source: Q4 sales figures, GfK¹⁷

¹⁵ In addition to this, Wightcable serves around 8,000 customers in the Isle of Wight, Scotland and northern England. Detailed data for Wightcable subscribers for Q4 2005 were not available at the time of writing.

¹⁶ Churn rates relate to the network operators' entire consumer business.

Cumulative total DTT boxes	DTT total	DTT total
	Q3, 2005	Q4, 2005
Freeview set top boxes	7,214,700	8,742,300
IDTV's	1,411,100	1,813,300
ITV Digital set top boxes ¹⁸	289,000	250,000
Total digital terrestrial units in market	8,914,800	10,805,600

Source: Ofcom, GfK

DTT households

A1.9 The total number of DTT-enabled TV sets in the market is now estimated to be over 10.8 million. The Ofcom estimate for homes where Freeview is the only digital platform is now around 6.5 million.

A1.10 In calculating the number of homes where Freeview is the only digital platform Ofcom has made the following deductions:

Second set duplication

A1.11 Latest available data (from Q3 2005) suggest that around 30.2% of Freeview boxes are being used on secondary sets by viewers who already have digital (either Freeview or Sky or cable) on their main set (source: GfK). Ofcom estimates that this equates to a total of 3.2 million DTT receivers on secondary sets.

Inactive boxes

A1.12 A number of DTT boxes are currently inactive, possibly because they were never installed by consumers, have been replaced, or because of reception issues. The latest estimate for this figure (from Q4 2005) is around 1,040,000 (source: GfK).

ITV Digital legacy boxes

A1.13 There are also around an estimated 250,000 ITV Digital legacy boxes remaining in the market. The number of homes where the ITV Digital box is the only digital platform is estimated at 130,000 homes (source: GfK).

Ofcom adjustment

A1.14 Ofcom has therefore deducted around 4.3 million from Freeview sales in order to account for these adjustments. This means the number of Freeview-only homes is therefore calculated as a little under 6.5 million.

A1.15 Compared to the Q3 homes estimate, DTT has added over 800,000 households during Q4, representing an increase of 14% on the Q3 total. Of these, Ofcom estimates that around 6,330,000 use Freeview set-top boxes or IDTV sets, with the additional 130,000 using former ITV Digital set top boxes.

¹⁷ Sales figures are adjusted upwards by 5% to represent GfK's estimate of the number of digital TV set top boxes and IDTVs sold via Northern Ireland, offshore islands, to staff and business to business, sales details for which are not compiled by GfK.

¹⁸ ITV Digital set top boxes – latest research on this area suggests that 289,000 ex-ITV digital boxes are still active. This number is steadily declining over time.

Summary of trends in digital take-up, market share and net additions

	2004 Q2	2004 Q3	2004 Q4	2005 Q1	2005 Q2	2005 Q3	2005 Q4
Digital take-up							
Digital cable	10.0%	10.1%	10.1%	10.2%	10.4%	10.6%	10.8%
Digital satellite	29.7%	30.0%	30.8%	31.3%	31.7%	32.1%	32.8%
DTT	14.1%	15.8%	18.5%	20.3%	20.8%	23.1%	25.7%
ADSL*	0.04%	0.05%	0.08%	0.08%	0.08%	0.15%	0.16%
Total digital	53.8%	55.9%	59.4%	61.9%	63.0%	65.9%	69.4%
Analogue cable	3.6%	3.5%	3.2%	3.0%	2.8%	2.6%	2.4%
Total multichannel	59.1%	59.4%	62.6%	64.9%	65.8%	68.5%	71.8%

Pay TV take-up**							
Cable	13.6%	13.6%	13.3%	13.2%	13.2%	13.2%	13.2%
Pay digital satellite	28.4%	28.6%	29.2%	29.5%	29.8%	29.9%	30.5%
ADSL*	0.04%	0.05%	0.08%	0.08%	0.08%	0.15%	0.16%
Total	42.1%	42.2%	42.6%	42.8%	43.1%	43.2%	43.8%

Share of digital TV market							
Cable	18.6%	18.1%	17.0%	16.5%	16.6%	16.1%	15.5%
Digital satellite	55.2%	53.6%	51.8%	50.6%	50.4%	48.7%	47.3%
ADSL*	0.07%	0.08%	0.13%	0.13%	0.13%	0.23%	0.23%
DTT	26.2%	28.2%	31.1%	32.8%	32.9%	35.1%	37.0%

Share of multichannel TV market							
Cable	23.7%	22.8%	21.2%	20.3%	20.1%	19.2%	18.3%
Digital satellite	51.7%	50.5%	49.1%	48.2%	48.2%	46.8%	45.7%
DTT	24.5%	26.6%	29.5%	31.3%	31.5%	33.7%	35.7%

Share of net additions							
Cable	6.9%	-1.0%	-6.7%	-2.2%	5.3%	0.0%	1.2%
Digital satellite	24.4%	17.8%	24.0%	24.0%	48.1%	14.1%	22.8%
DTT	68.6%	82.7%	75.0%	76.0%	46.7%	83.4%	76.0%
ADSL*	0.2%	0.5%	0.9%	0.0%	0.0%	2.5%	0.0%

Source: Ofcom, GfK, network operators, BSkyB

* ADSL figures include HomeChoice figures for September 2005. HomeChoice figures for December 2005 are not in the public domain

** Latest figures for Top Up TV are not in the public domain. Subscribers to Top Up TV also receive free-to-view DTT, and are therefore included in the DTT market shares