The equipment needs of consumers facing most difficulty switching to digital TV

DTI

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Jeremy Klein (Scientific Generics)
Natalie Scott (Scientific Generics)
Kay Sinclair (Scientific Generics)
Sarah Gale (Ipsos-MORI)
John Clarkson (Cambridge University)

Scientific Generics Limited
Harston Mill
Harston
Cambridge CB2 5GG

A Generics Group company

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EXECUTIVE SUMMARY

This report describes the equipment requirements for consumers who would find it most difficult to switch to digital TV. These are:

1. People for whom the transition to digital television would create difficulties using only currently available digital equipment
2. People for whom the transition to digital television will allow for assistive technologies such as audio description to enhance their experience of television
3. People who are included in the targeted assistance scheme for the vulnerable.

Through a programme of analysis we have identified four products which we expect to meet the majority of needs.

	Product	Realisation strategy
1	**A reduced functionality, simplified set top box** Target - mild capability loss, severe hearing loss, severe cognitive loss and technophobia Market size – 2.2 million The product uses an additional remote control with fewer buttons than is normal. It avoids menus, which are a source of difficulty and exclusion. It would have buttons for the main channels plus 5 more ‘favourites’ that can be chosen when the set top box is installed. The EPG would be a simple ‘now and next’ display.	The simple remote control would co-exist with a standard, fully-featured one as an optional extra. The total market volume should be large enough that this remote control can be a commercial proposition without any subsidy. There could be a common standard so that the single remote control could work with many manufacturers’ STBs. Manufacturers could be brought together under the auspices of Intellect or the DTG to agree a *reduced instruction set* of remote control instructions and codes. This would allow economies of scale in both STB software and in remote controls.

	Product	Realisation strategy
2	**An ultra-usable fully featured set top box** Target - mild capability loss, severe hearing loss, severe cognitive loss and technophobia Market size - 5.1 million The product would have a more demanding user interface than the reduced functionality STB but would be designed with improved usability as a priority. It should follow best practice, incorporating such features as: a single remote to control the TV and STB; a 'home' button to get to safe ground; menus which can be operated by numbers, and an indicator on the STB to show status.	This would not need to be a specially commissioned product. It could be a mainstream product chosen through competitive evaluation by Ricability or a similar organisation. The objective of such a product should be published, and manufacturers should be asked to submit candidate products for testing.
3	**Assistive STB for dexterity and/or visual loss** Target - dexterity and/or visual loss Market size - 0.6 million The product would compensate for visual and dexterity loss by providing information to the user in the audio channel. Thus, the product would include audio description, audio feedback from the remote control keys and an audio EPG.	Volumes would be too low for this to be a mainstream product. It would need active involvement from one or more of the charities and some level of subsidy.
4	**Adapted STB as a platform for variants addressing other types of severe or multiple loss** Target – other types of severe or multiple capability loss Market size - 0.3 million Individual product variants could incorporate options such as signing or voice control. Each variant would have a small market, however.	These are products which would have to be provided in small volumes with the active involvement from one or more of the charities and a subsidy.

1 INTRODUCTION

This report was commissioned by the DTI to advise on the equipment needs of consumers who would face most difficulty were they to use equipment likely to be available 'off-the-shelf'.

Specifically the purpose of the study was to:

1 understand the equipment needs of different sets of UK consumers who have difficulty using digital TV equipment (whether existing users or not);

2 suggest a research based minima! set of equipment offerings that would meet the needs of consumers, maximising the number of people whose needs could be met by the normal market for DTV equipment;

3 provide a practical approach to identifying groups of consumers for which each offering would be targeted, and approximate sizes of the target groups.

We have researched these questions using data and inputs from a number of sources:

- Quantitative data from the Office for National Statistics (ONS) 1996/7 – see Appendix A.
- Results from the switchover in Ferryside/Llansteffan – see Appendix B
- Specially commissioned questions in the Ipsos 'Quest' panel survey – see Appendix C
- Discussions with charities representing the elderly and people with disabilities, and with retailers and TV equipment manufacturers – see Appendix D.

The work has been undertaken by three organisations working together:

- **Scientific Generics**, a technology–based consultancy, had lead responsibility for the project and built on its experience of product development and inclusive design
- **Ipsos MORI**, an international market research organisation, provided an analysis of the difficulties faced by consumers during the switchover in Ferryside/Llansteffan, together with other findings from many years of researching DTV.
- The **Engineering Design Centre** (EDC) at Cambridge University undertook analyses of the ONS data set and provided quantitative information on the population distribution of disabilities and multiple disabilities. The EDC also contributed their experience of inclusive design methodologies.

This report is structured as follows. Chapter 3 presents results on the numbers of people who will face most difficulty and on the types of difficulty they will experience. Chapter 4 then identifies types of equipment that could be produced to meet these difficulties. Chapter 5 suggests mechanisms by which such equipment could be brought into existence – See Appendix E for a range of potential mechanisms.

2 SCOPE OF THIS REPORT

Digital television equipment is paradoxical. On the one hand, new facilities such as audio description and closed signing are made possible by the new technology, thereby allowing the equipment to offer television to people who had previously been excluded. On the other hand, the complex user interface and multiple remote controls in many installations, together with the often confusing way of navigating through digital content, have introduced barriers which could exclude or frustrate people who were perfectly able to use analogue equipment.

This dilemma is well recognised. There have been many exercises in the past few years which have sought to identify areas where digital television equipment could be improved relatively easily. These exercises have often pointed to deficiencies in current products and then produced checklists and design guides which, if followed, would lead to more usable equipment. The most recent such guide was published by Ofcom[1]. We have not attempted to duplicate this research.

Rather, we have taken the existing range of commercially available digital television products as the backdrop and asked the pragmatic question, "Where is the market unlikely to produce equipment that will meet people's needs, and what interventions could most effectively encourage new equipment into existence?"

A series of Government procurement contracts could be one form of provision. While such contracts are feasible, they would be anachronistic in a fast moving consumer electronics market, where competition serves to increase features and reduce price month by month.

We have therefore considered ways of using market mechanisms where possible. This implies high volumes. The most prevalent form of conversion to digital television is by using a set top box (STB). These are low cost, high volume products with very low margins. As an indication, a mid-range set top box would be produced in volumes of several hundred thousand units. Where a new piece of equipment could achieve this scale of production, there is a chance that it could be developed and produced commercially with a minimum level of intervention. Where volumes are lower than this, the market will not provide new equipment and greater intervention would be necessary.

In this report we have concentrated on the *use* of digital television equipment and have excluded *installation* from our report. The targeted assistance scheme is intended to include help with installation.

[1] Summary of research on the ease of use of domestic digital television equipment, Ofcom, 8 March 2006 (http://www.ofcom.org.uk/research/tv/reports/usability/dtvu.pdf)

3 IDENTIFYING AND QUANTIFYING THE TARGET POPULATIONS

3.1 Identifying the target populations

Our brief was deliberately open-ended on the target groups for this study. We have identified three target populations for this research:

1. People for whom the transition to digital television would create difficulties using only currently available digital equipment
2. People for whom the transition to digital television will allow for assistive technologies such as audio description to enhance their experience of television
3. People who are included in the targeted assistance scheme for the vulnerable.

These three populations are not mutually exclusive; they overlap. The populations are described below.

1. Consumers facing difficulty

> *People for whom the transition to digital television would create difficulties using only currently available digital equipment*

We are concentrating here on difficulty *controlling* the TV rather than enjoying content. By focusing on the transition to DTV, we are excluding people who would have the same difficulties with currently available digital equipment as they already have with analogue.

Current digital equipment is assumed to comprise adding a Freeview set top box to an existing TV set, which will be the least cost option in most cases. We spoke with a small selection of retailers and manufacturers and there was no indication that the usability of DTV equipment would soon be improving. Therefore the usability issues that have been identified seem unlikely to be addressed in the design of future set top boxes as things stand.

IDTVs offer a simpler solution which in turn addresses some of the usability problems associated with set top boxes (eg multiple remote controls) but the cost of this option led us not to take it as the baseline option for switchover.

Accordingly, our definition implies two main sources of difficulty:

- **Difficulty due to capability loss**: Using two remote controls, using menus and using the EPG present difficulties as a result of the greater cognitive, visual and dexterity demands of current set top boxes and their remote controls. Loss of vision of dexterity therefore presents difficulties. Hearing is not required as part of the process of controlling digital television equipment and therefore the switchover from analogue to digital does not create exclusion due to hearing loss.

- **Difficulty due to lack of technological understanding**: Resulting from fear or unfamiliarity with technology, particularly if the user has not had previous experience of such products.

Obviously, there is no hard and fast dividing line which separates people who would have difficulty from those who do not. There are three issues to consider:

- **The distinction between exclusion and difficulty**. Some people can be literally *excluded* from using an STB due to capability loss. For example, if your vision is such that you cannot see an on-screen menu, you are not in a position to make choose a menu item. Exclusion is based on the ability to perform basic tasks such as channel hopping and using basic EPGs. Other people may not be excluded but may face extreme difficulty and frustration when trying to use an STB owing either to mild capability loss or to a lack of technological understanding.
- **Level of functionality sought**. Level of difficulty cannot be determined in isolation from the level of functionality being sought. For example, a set top box may be easy for someone to use for simple functions such as changing the volume, but difficult for that same person to use for more complicated functions such as digital text.
- **Coping mechanisms**. When faced with difficult-to-use products, people often develop coping mechanisms.

2 People benefiting from assistive technologies

People for whom the transition to digital television will allow for assistive technologies such as audio description to enhance their experience of television

Facilities such as audio description for people with visual problems and signing for people with hearing difficulties are not available on analogue televisions. They represent a potential benefit of digital television which should, where possible, be incorporated in the equipment on offer.

3 People in the targeted assistance scheme

People who are included in the targeted assistance scheme for the vulnerable

Ministers have announced a package of support criteria for what may be called ‘the vulnerable’. These are:

- households with one person aged 75 or over;

- households with one person with a significant disability (receiving attendance allowance, disability living allowance);
- households where one person is blind.

Though the precise nature of assistance has yet to be announced, the criteria for inclusion in the scheme are clear and unambiguous.

3.2 Quantifying the target populations

3.2.1 Facing difficulty or able to benefit from assistive technologies

For convenience we have combined the first two target populations. In coming to a quantification, three main sources of difficulty have been considered:

1. Difficulties due to severe capability loss

The ONS data (see Appendix A) indicates that approximately 1.2 million households could be excluded from current STB's due to severe loss of physical, sensory or cognitive capability.

2. Difficulties due to mild capability loss

The ONS data (see Appendix A) indicates that approximately 3.5 million households have mild capability loss due to loss of physical, sensory or cognitive capability. 0.8 million of these households are excluded from the use of current products due to their capability loss, whereas the remaining 2.7 million are not excluded but may have difficulty using current STBs.

3. Difficulties due to 'technophobia' - fear or unfamiliarity with technology

The ONS data does not contain statistics on whether people are fearful, unfamiliar or unconfident with technology (identified in this report as 'technophobia'). However, using the Philips Index Survey (see below) we have estimated that at least 3.5 million households would have severe problems resulting from this cause. This figure was obtained through looking at the able bodied households only.

The Philips Index Survey is a survey carried out by Philips to uncover how people feel about the state of their health, the quality of their well being and their relationship with technology. It is a quantitative survey based on a representative sample of 1,500 US consumers aged 18 +, which was split according to age range and sex. We focused on the data relating to the complexity of current technology products, in particular the balance between advanced and basic functions.

In total, some 8.2 million households may have difficulty in the transition to digital television and 2 million of these will be *excluded* from using current STBs as illustrated in Figure 1.

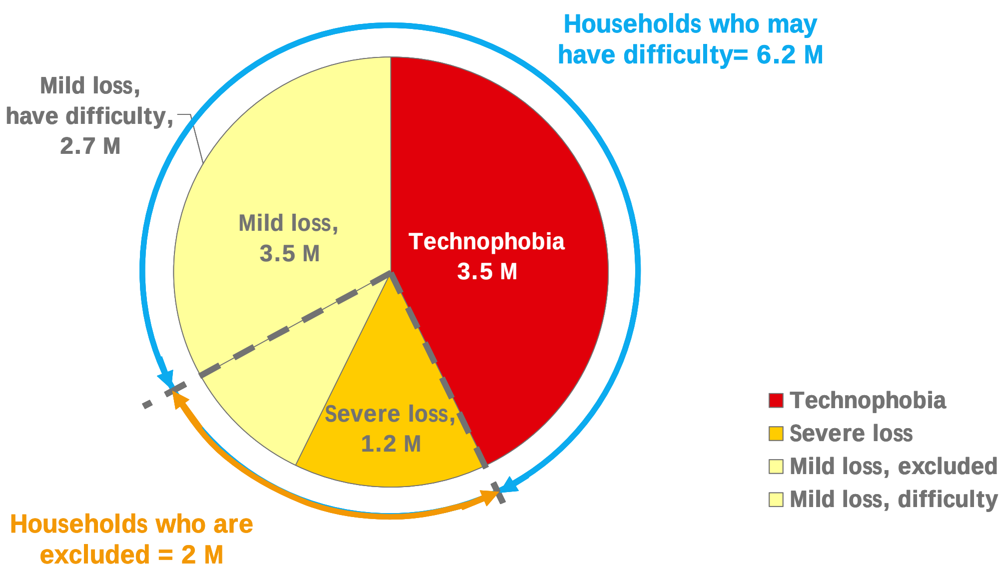


Figure 1 - Households facing difficulty or able to benefit from assistive technologies split by type

The 1.2 million severe loss households include 0.9 million with single severe losses and 0.3 million with multiple severe losses. The ONS data does not allow us to accurately quantify the number of households with each type of capability loss.

3.2.2 Eligible for targeted assistance

Using the ONS data alone we estimate that there will be 5.3 million households who would fall into the announced assistance scheme out of a total of 25.5 million households in the UK. The current estimate from DCMS, based on up-to-date figures from DWP, is higher. Our figures are only an approximation because the Family Resources Survey data on which this is based was conducted in 1996/7 and the numbers of people claiming DLA has been rising steadily since then. The reason for using 1996/7 data was the need to combine data points with the Disability Follow-up Survey (DFS) which is only run every ten years.

There are also 0.4 million severe loss households where a member has a severe capability loss but is not registered as being disabled. These households would not be eligible for assistance.

The 5.3 million households who are eligible for assistance can be split as shown in Figure 2.

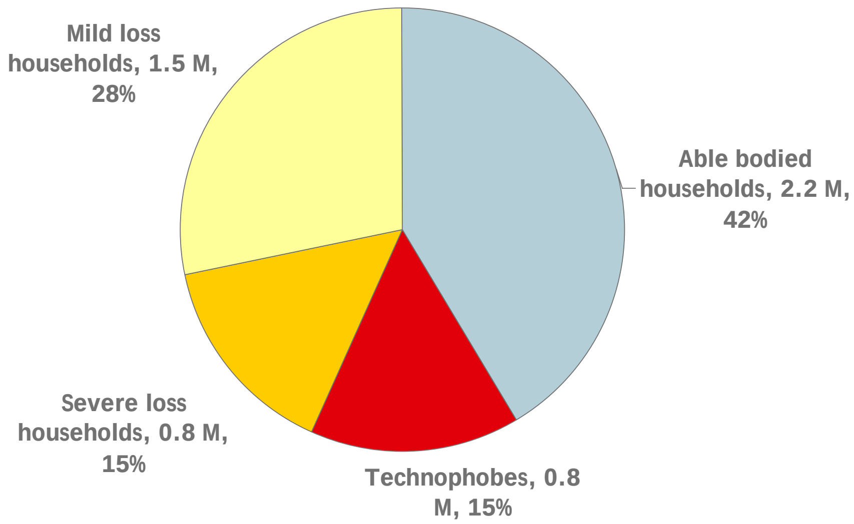


Figure 2 - Breakdown of households eligible for assistance

3.3 Breakdown of all UK households

Figure 3 shows a breakdown of all UK households according to level of capability and eligibility for targeted assistance.

	Millions of UK households		
	Eligible for targeted assistance	Not eligible	Total
No difficulty	2.2	15.1	17.3
Difficulty or exclusion			
Technophobia	0.8	2.7	3.5
Mild loss of capability	1.5	2.0	3.5
Severe loss of capability	0.8	0.4	1.2
Sub-total	3.1	5.1	8.2
Total	5.3	20.2	25.5

Figure 3 – Categorisation of all UK households

The overlap between 'consumers facing most difficulty' and those 'eligible for targeted assistance' is shown in Figure 4.

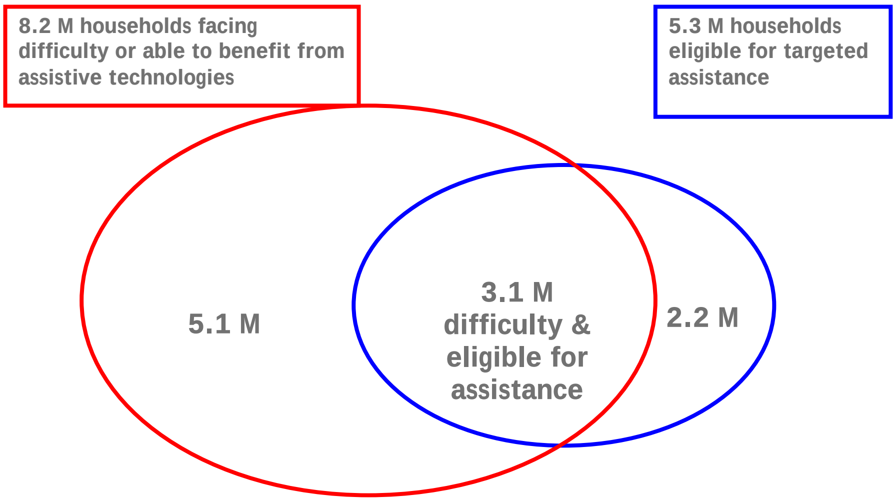


Figure 4 - Overlap between households facing difficulty or able to benefit from assistive technologies with those eligible for targeted assistance

4 EQUIPMENT OPTIONS

4.1 Summary of product proposals

We propose four product options which are shown in Figure 5:

- Products 1 and 2 cover technophobia, mild capability loss, and mainly hearing loss and severe cognitive loss
- Product 3 covers mainly severe dexterity and visual loss
- Product 4 covers certain types of severe and multiple capability loss.

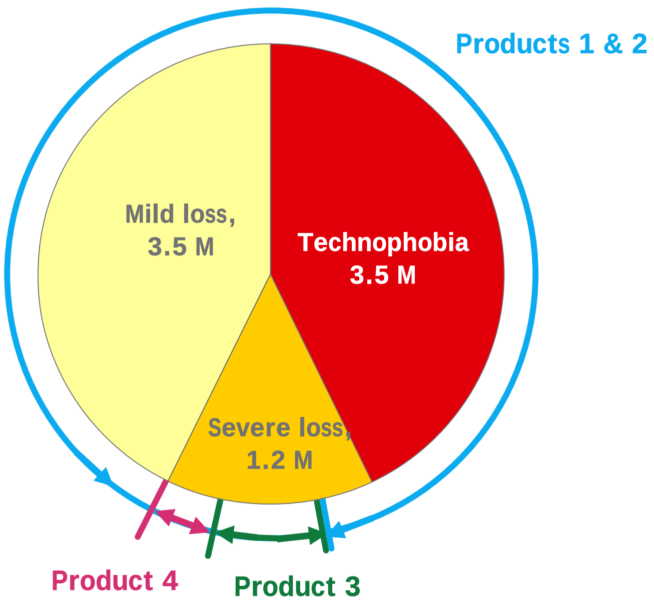


Figure 5 - The four proposed products

The potential market sizes for the four products are shown in Figure 6.

<table>
<tr><th colspan="2">Segment</th><th colspan="2">Equipment suggested based on desired level of functionality</th></tr>
<tr><td colspan="2" rowspan="2">Mild capability loss and/or technophobia and or severe hearing loss

Market size = 7.3 M
Mild loss = 3.5 M
Technophobia = 3.5 M
Mainly cognitive and hearing severe loss = 0.3 M</td><td>1</td><td>A reduced functionality STB
(Market size = 2.2 M)</td></tr>
<tr><td>2</td><td>An ultra-usable fully featured STB
(Market size = 5.1 M)</td></tr>
<tr><td rowspan="2">Severe capability loss</td><td>Mainly dexterity and visual severe loss
Market size = 0.6 M</td><td>3</td><td>Assistive STB with audio description, audio feedback keys, talking EPG, distinct well spaced buttons</td></tr>
<tr><td>Other severe and multiple loss
Market size = 0.3 M</td><td>4</td><td>Adapted STB with options such as signing (a proportion of deaf people need signing) and voice activation for people with severe dexterity loss</td></tr>
</table>

Figure 6 - Market sizes for the four proposed products

4.2 Clustering methodology

The methodology behind the four products is described below.

The previous chapter developed an understanding of those households that will have most difficulty, or could benefit from assistive technologies, during the switch over from analogue to digital television. Although 3.1 million such households are included in the targeted assistance scheme, there are a further 5.1 million households who could have some level of difficulty that do not fall into the scheme.

This is a sufficiently large number of households that if a single product were able to cater for a substantial proportion of these, then product volumes would be of the same order as those normally reached in mainstream markets. We therefore set about establishing whether there were any single products that would have large enough volumes.

We started by recognising that mild capability loss and technophobia causes problems for users in a similar way. Figure 7 illustrates the problem. Digital television allows much greater functionality (many channels and interactive features) but makes a correspondingly greater interaction demand on users. The interaction process requires users to understand and use menus, press remote control keys to choose menu items, navigate the EPG, and so on. Faced with these demands, users may face either physical or cognitive difficulties. The remote control was pinpointed as a major source of problems in the Ferryside/Llansteffan switchover – see Appendix B.

It might be thought that users could simply scale-back their use of a set top box. However, as illustrated in Figure 7, the interaction demand of digital television is greater even if the functionality being sought is only similar to analogue television.

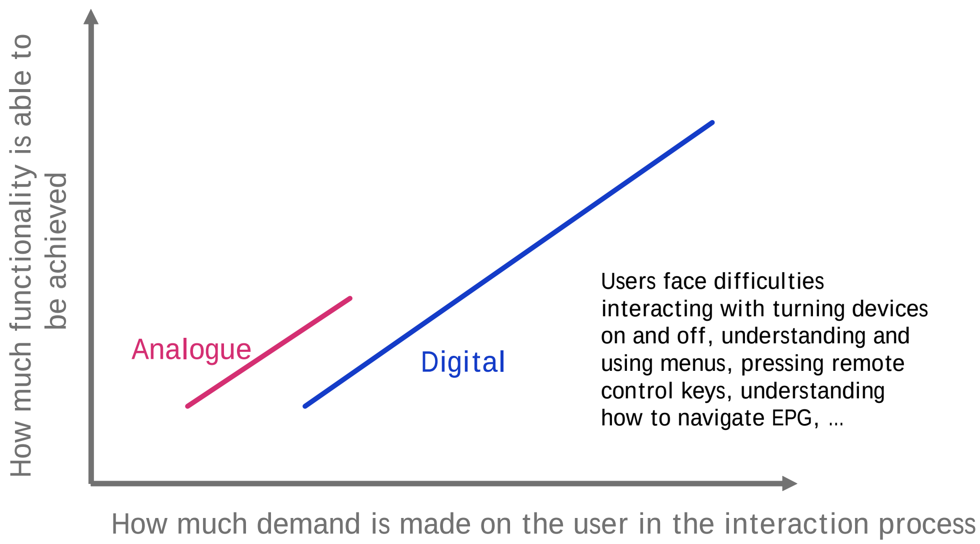


Figure 7 - Illustration of the relation between functionality and demand made on the user

One way of reducing the user interface demand of digital television is to reduce the functionality available – fewer channels or fewer interactive features. This would allow the user interface to be structured around deterministic key presses rather than menu navigation. For example, pressing the '1' key would bring up channel 1, not be the first digit in a sequence which would have to end with an 'OK'. In effect, the user interface would be made closer to analogue television in terms of its user demand, but would pay for this by reduced functionality. The approach is illustrated in Figure 8.

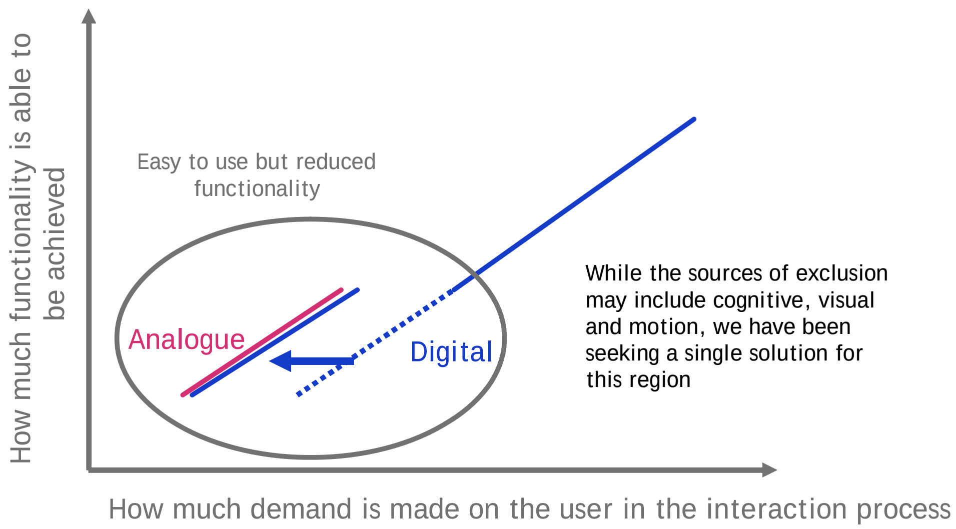


Figure 8 - Interaction demand can be reduced by correspondingly reducing functionality

We have called this ‘Product 1 - a reduced functionality STB’. If the product were simple enough, much severe cognitive loss could be included, together with hearing loss, apart from signing, can also be included.

While this product would help address many of usability issues that people have using STBs, it does assume that people only desire a basic level of functionality. However, some users may desire all the functions that are offered on a current STB. It is therefore necessary to offer a STB with the same level of functionality as existing STBs, but easier to use. We have called this ‘Product 2 – an ultra-usable STB’. Product 2 would have a more demanding user interface but would be designed with improved usability as a priority. In our ‘Quest’ survey (see Appendix C) 82% of respondents regarded usability as important or very important in their choice of equipment.

The total demand addressed by products 1 and 2 would be 7.3 million households. The split between the two products depends on the proportion of people who would be prepared to sacrifice functionality for ease of use. To estimate this proportion we included a series of questions in an omnibus ‘Quest’ survey conducted by Ipsos Mori in March 2006 - see Appendix C.

Figure 9 shows that 29% of respondents would be keen on buying a reduced functionality box even if it had fewer channels. This proportion rises to 44% for the over 55s and is higher for females than males.

The survey also allowed us to explore the number of channels and functionality required in such a box:

- Figure 10 shows that at least half of respondents would want the main channels plus 5 more ‘favourites’ that can be chosen when the set top box is installed. This proportion rises to two-thirds for the over 55s, and is also higher for women.
- Figure 11 shows that there is less agreement on the type of EPG but that half of respondents want no EPG or just a simple ‘now and next’ EPG. This proportion rises to 60% for the over 55s, and is also higher for women.

We estimate that product 1 would be chosen by about 30% of the 7.3 million households in this first cluster.

A manufacturer of set top boxes is thinking of designing a ‘simple to use’ set top box which would have fewer channels and features than a standard set top box (which has over 40 channels). The remote control could therefore have fewer buttons and there would be no need for menus (A menu uses the remote control in combination with choices displayed on the TV screen in order to select channels and functions.)

Would you choose to buy such a ‘simple to use’ set top box instead of a standard one even if it had fewer channels and features?

	Total	**Male**	**Female**	**16-34**	**35-54**	**55+**	**ABC1**	**C2DE**
Weighted base	2000	965	1035	599	715	685	999	1001
	582	242	340	97	184	302	286	296
Yes – choose simple box	29%	25%	33%	16%	26%	44%	29%	30%

Figure 9 – Proportion of respondents that would choose to buy a reduced functionality set top box instead of a standard one even if it had fewer channels and features

In such a set top box, how many channels would you prefer?
- Just the 5 main channels such as BBC1, BBC2, ITV, Channel 4 or S4C and Five
- The main channels plus 5 more 'favourites' that can be chosen when the set top box is installed
- More than 10 channels in total

	Total	**Male**	**Female**	**16-34**	**35-54**	**55+**	**ABC1**	**C2DE**
Weighted base	582	242	340	97	184	302	286	296
Just the 5 main channels such as BBC1, BBC2, ITV, Channel 4 or S4C and Five	38	13	25	1	7	30	18	20
	6%	5%	7%	1%	4%	10%	6%	7%
The main channels plus 5 more 'favourites'	338	125	213	51	93	194	185	152
	58%	52%	63%	52%	51%	64%	65%	51%
More than 10 channels	201	104	97	45	82	74	83	118
	34%	43%	28%	47%	45%	24%	29%	40%
Not answered	6	1	5	-	1	5	-	6
	1%	*	2%	-	1%	2%	-	2%

Figure 10 – Number of channels preferred in reduced functionality set top box

In such a set top box, an Electronic Programme Guide (EPG) will allow you to bring up on the screen details of the programmes that are being shown on the various channels. What sort of EPG (electronic programme guide) would you prefer?
- No EPG at all
- A simple guide showing just the current and next programmes
- A guide for the day ahead
- A guide for the next seven days

	Total	**Male**	**Female**	**16-34**	**35-54**	**55+**	**ABC1**	**C2DE**
Weighted base	582	242	340	97	184	302	286	296
No EPG at all	72	35	37	3	19	49	36	36
	12%	14%	11%	3%	10%	16%	12%	12%
A simple guide showing current and next	221	84	137	32	63	126	108	113
	38%	35%	40%	33%	34%	42%	38%	38%
A guide for the day ahead	175	72	103	33	59	83	84	91
	30%	30%	30%	34%	32%	27%	29%	31%
A guide for the next 7 days	107	50	57	29	42	36	58	49
	18%	21%	17%	30%	23%	12%	20%	16%
Not answered	7	1	6	-	-	7	*	7
	1%	*	2%	-	-	2%	*	2%

Figure 11 – EPG type preferred in reduced functionality set top box

Having identified this major cluster, we then noted that the main combination of severe loss is dexterity and vision loss. We hypothesised that vision loss, dexterity loss and the combination of vision and dexterity loss could be met in a similar way. The needs of these groups in relation to the design of the remote control are also similar and can be addressed by a similar product solution. The product can compensate for visual and dexterity loss by providing information to the user in the audio channel. Thus, the product would include audio description, audio feedback from the remote control keys and an audio EPG. The remote control would have distinct shaped buttons that are widely spaced; these would benefit people with both types of loss. We therefore proposed 'Product 3 – An assistive STB' for vision and dexterity loss. We estimate that the total market would be 600,000 households.

The final segment would cater for those who require specialist features due to combined severe loss or extreme cases of capability loss. The design changes are necessary dependent on individual requirements. The product would be a platform which could take options such as signing or voice control. We have called this 'Product 4 – Adapted STB'. We estimate that the total market would be 300,000 households if all types of capability loss could be addressed. Each individual product variant in this segment would have a smaller market than this.

5 PRODUCT SPECIFICATIONS AND REALISATION STRATEGIES

5.1 Product 1: Reduced functionality STB

5.1.1 Specification

- Deterministic buttons, not menu driven

  Each button would be directly interpreted as intended and would get you to the intended location no matter where you are.

- One remote to control TV and STB

  This would not be a learning RC but would need to be loaded with TV codes at the time of setup.

- Offer limited channels (10 channels – one per button)

  The channels would be allocated at setup, but certainly channels 1 thru 5 would be the five analogue channels

  Selection would be through a 10 button keypad

- Offer basic on/off EPG table showing now and next

  Not an interactive EPG, just one that displays the ten channels

- Offer basic on/off subtitle button
- Provide basic feedback for status of the STB (LCD on STB)

  The STB front panel should be able to send instructions to the user regardless of whether the TV is on or correctly receiving the output from the STB

- Distinct shaped buttons
- Co-exist with a standard remote for complex functions (standard layout).

5.1.2 Realisation strategy

The concept of a simplified remote control is not new. However, the idea has not 'taken off'. Our proposal is that the simple remote control would co-exist with a standard, fully-featured one. The simplified remote control would be an optional extra. The concept is illustrated in Figure 12. The standard remote control would be used for setup and for anyone else in the household whereas the simplified 'everyday' remote control would be used by the person who would have difficulty with the standard remote control.

The total market volume should be large enough that this remote control can be a commercial proposition without any subsidy. However the extra costs would need to be amortised across as many units as possible. This implies that the remote control and associated STB software should be applicable to more than one STB. This could be achieved across an individual manufacturer's products so that a single simple remote control would work with all STBs from that manufacturer. Alternatively, there could be a common standard so that the single RC could work with many manufacturers' products. This would require a standard for a *reduced instruction set* of infra red codes to be developed and implemented in set top boxes.

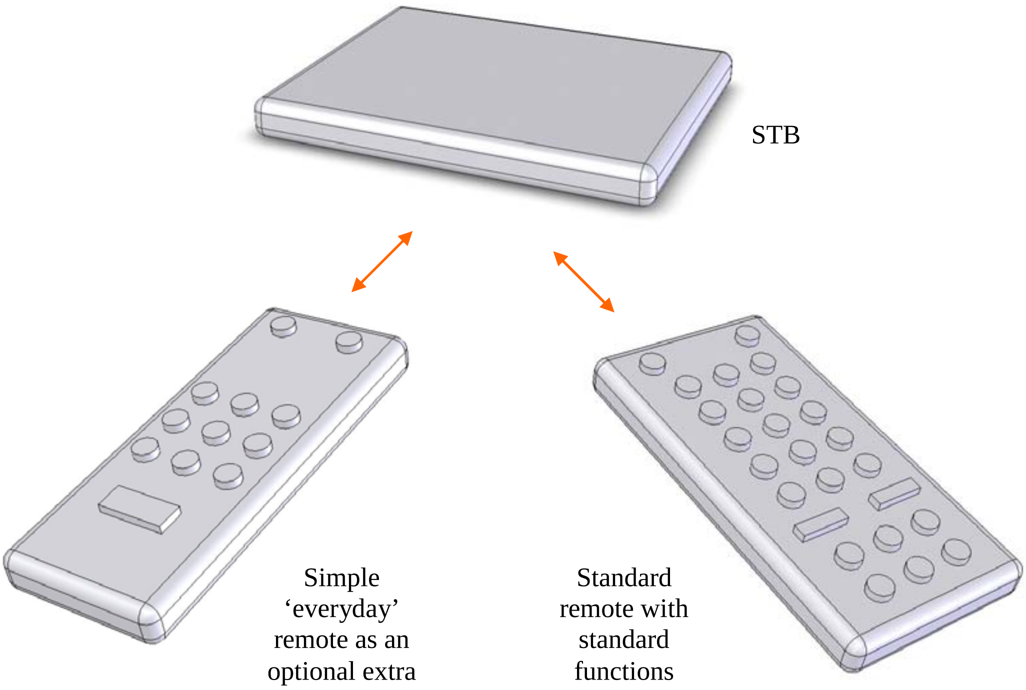


Figure 12 - The simplified remote control would work alongside a standard one

In practice, manufacturers source their product range from several different suppliers, each of which would need a different software fix. So achieving compatibility across the product range would be as difficult to achieve as achieving compatibility across different manufacturers.

We recommend that the common standard approach should be attempted. Manufacturers could be brought together under the auspices of Intellect or the DTG to agree a *reduced instruction set* of infra red instructions and codes. This would allow economies of scale in both STB software and in remote controls.

The commercial impetus would be provided by the opportunity to make sales under the targeted assistance programme. For example, vulnerable households could be offered a free simple remote control and a choice of set top boxes that would work with it.

5.2 Product 2: Ultra-usable fully featured STB

5.2.1 Specification

The intention behind this STB concept is that it should be as usable as possible while retaining full functionality. It should follow best practice, incorporating such features as:

- One remote to control TV and STB
- Hide/separate complex functions: through use of a flip lid, cover complex functions or sliding cover over complex functions
- Use similar button shapes/colour to distinguish different functions
- Well spaced buttons
- Clear text (large, strong colour contrast) and standard use of terminology
- Home safety button

  The button gets you home to safe ground
- Redesign structure of menu system - number based system, adopt standard layouts (tables)
- Use of large formatable text in menu systems
- Simple operations, step by step guidance
- Reduce pauses between changing channels - number entry (standard number entry)
- Indicator for STB status - Error (needs resetting), Searching for channel, loading etc.

5.2.2 Realisation strategy

This would not need to be a specially commissioned product. It could be a mainstream product chosen by competitive evaluation by Ricability or a similar organisation. The objective of such a product should be published, however, and manufacturers should be asked to submit candidate products for testing.

5.3 Product 3: Assistive STB

5.3.1 Specification

This product would target people with severe loss of vision and/or dexterity

- Audio features in STB to assist both vision and dexterity issues
    - Audio EPG
    - Audio feedback of RC buttons
    - Audio description
- Dexterity features in remote control
    - distinct buttons (curvature)
    - bold colours

5.3.2 Realisation strategy

Volumes would be too low for this to be a mainstream product. It would need active involvement from one or more of the charities and some level of subsidy.

5.4 Product 4: Adapted STB

5.4.1 Specification

Specialist adapted features based on individual preference such as:

- Signing facility
- Voice operation.

5.4.2 Realisation strategy

These are products which would have to be provided in small volumes with the active involvement from one or more of the charities and a subsidy.

APPENDIX A METHODOLOGY FOR THE USE OF ONS DATA

Our approach has been to use Office for National Statistics (ONS) 1996/7 data from the Family Resource Survey (FRS) for analysing households and to use the Disability Follow-up Survey (DFS) for analysing disability. The reason for using 1996/7 data was the need to combine datapoints with the Disability Follow-up Survey (DFS) which is only run every ten years.

This data was then scaled accordingly to represent the 2004 UK population for the people aged over 16 years. The DFS survey gives data for the capability levels of a sample of individuals who self-reported their capabilities. By filtering this data set according to different capability thresholds it has been possible to estimate the percentages in the UK population of people who satisfy certain conditions. By combining this data with data from the FRS, it has also been possible to estimate the number of UK households that satisfy the same conditions – which is a better predictor of TV requirements.

In all cases we have looked at the total potential market, regardless of whether people already have DTV.

APPENDIX B RESULTS FROM THE SWITCHOVER IN FERRYSIDE/LLANSTEFFAN

B.1 Introduction

During 2004/5 Ipsos MORI carried out some research for the DCMS examining the level of difficulty experienced by consumers when the analogue signal was switched off in Ferryside and Llansteffan and results of this study have been reanalysed in the context of the above objective.

The Ipsos MORI research in Ferryside and Llansteffan defined 'vulnerable' groups as those aged over 75 and/or those with disabilities (definition provided by the DCMS). However, this definition could potentially exclude other groups who may have difficulties with equipment. Therefore this appendix presents a 'top-down' approach, profiling those who experienced any difficulties and providing a more in-depth understanding of the exact difficulties experienced. This data is also supplemented, where appropriate, with findings from Ipsos MORI's Digital Audience Research Tracker, full details of which are provided below.

B.2 Studies covered

Ferryside and Llansteffan

The overall objective of this research was to evaluate the human effects of a switchover to digital television, specifically with regards to how this would impact upon the elderly and/or disabled members of society. To determine appropriate levels of support, this research set about observing behavioural patterns and analysing people's attitudes towards the switchover – especially regarding those within specifically defined 'vulnerable' groups.

In order to fully understand reactions to an enforced switchover to digital, a multi-phased programme of research was undertaken as follows:

- (Quantitative) Self-completion questionnaire to c.91% of all 475 Trial households (to benchmark attitudes prior to switchover)
- (Qualitative) In-depth interviews within 8 Trial households (to provide case studies of attitudes towards switchover amongst older or disabled households, prior to switchover)
- (Quantitative) Self-completion questionnaire to c.86% of all 475 Trial households (to understand evolution of attitudes post switchover)

- (Qualitative) In-depth interviews with 9 Trial households (to revisit case studies and understand attitudinal shifts amongst ‘vulnerable’ group post switchover)

Whereas the purpose of the quantitative phases was to benchmark and measure changes in attitudes on a larger scale before and after digital installation, the intention of the qualitative phases was to provide detailed analysis on a more personal level.

In terms of equipment, trial households could either:

- Choose from a selection of 5 set top boxes, and 2 PVRs which were type-tested as ‘fit for purpose’ (e.g. MHEG) and which were fully subsidised. A full subsidy for the Netgem set top box (the only set top box on the market with audio-description) was available to individuals who were vision-impaired. A twin tuner PVRs was used to convert TV/VCR ‘clusters’, allowing the user to record one programme while watching another.

or:

- Purchase any digital equipment of their choice from any retailer and claim a subsidy from the Trial to the equivalent cost of providing the Trial equipment described above,

or:

- Obtain digital satellite services and qualify for the equivalent (one-off) subsidy.

Quantitative Research

On 29th November 2004 digital transmissions from the Ferryside transmitter were switched on, and on March 30th 2005 the analogue transmissions were switched off.

The first survey was conducted in December 2004/January 2005, soon after digital installation had been completed, and the second stage was conducted in the latter half of April 2005, two weeks after the analogue signal had been switched off.

The surveys were designed to provide a quantitative analysis of the trial audience’s reaction to the switchover to digital television. Of particular interest was the level of support needed by vulnerable groups in their installation and subsequent use of DTV equipment. For the purposes of the analysis of these surveys, “vulnerable” has been defined as aged 75 or over and/or with a disability.

A summary of the quantitative research is provided below:

Method	Self-completion postal questionnaires
Survey Universe	Households in Llansteffan and Ferryside that were taking part in the digital switchover technical trial.
Fieldwork Period	Wave 1 Fieldwork - 16th December 2004 - 21st January 2005 Wave 2 Fieldwork – 16th April 2005 – 27th April 2005
Response Rates	Wave 1 – 423 questionnaires sent and 218 returned (of which 214 had already had digital equipment installed), representing a response rate of 51.5% Wave 2 – 473 questionnaires sent and 195 returned, representing a response rate of 41%.
Analysis & Weighting	Data processing of postal questionnaires by Ipsos MORI. No weighting was undertaken on this survey

Qualitative Research

Along with the quantitative research, a programme of qualitative research was also conducted to examine feelings towards the digital switchover in more depth. These were mainly conducted in older households. The first phase of the qualitative research comprised in-depth interviews with eight households, five in Llansteffan and three in Ferryside on the 21st and 22nd December 2004. The table below shows the profile of the respondents interviewed.

	Age	**Disabilities**
Couple	60s	None
Couple	80s	Invalid wife
Couple	70s	Husband has sight deficiency
Couple	Husband 70s, Wife 50s	Wife is bed bound
Widow	80s	Limited mobility, deaf
Widow	70s	None
Widow	70s	Poor sight
Widow	70s	None

The respondents were chosen from a list of householders who had been contacted by the DCMS and had agreed to take part in the qualitative research. They represent a cross-section of the elderly population of these two villages, both of which are popular places for holiday cottages and for retirement. All but one of the respondents were English people who had moved to West Wales to retire, but two had already been working in Wales and had stayed on in retirement and several had lived there for 10 to 20 years. The one truly 'local' resident, was Welsh-speaking and the interview was conducted in Welsh.

The second phase of the qualitative research comprised depth interviews with nine households, four in Llansteffan and five in Ferryside on the 20th and 21st April 2005. The table below shows the profile of the respondents interviewed.

	Age	**Disabilities**
Couple	80s	Invalid wife
Couple	Husband 70s, Wife 50s	Wife is bed bound
Couple	60s	None
Couple	60s	None
Couple	60s	Wife is bed bound
Single Man	90s	None
Widow	70s	Poor sight
Widow	70s	None
Widow	70s	None

Three of the respondents were Welsh, the others were English, but had all been living in Wales for some time. All of the interviews were conducted in English. We interviewed five households that we had interviewed in December and four households we had not previously interviewed.

DART

Ipsos Media runs DART, the quarterly Digital Audience Research Tracker, as an off the shelf product. DART is run Quarterly in October/January/April/July and covers the following:

Quarter One / Quarter Three (October / April)
Multi Channel TV, TV in my household in the future, Attitudes to TV, Digital Radio, Freeview, Onscreen Guide and PVRs.

Quarter Two / Quarter Four (January / July)
Multi Channel TV, TV in my household in the future, Analogue switch off, Interactive TV, BBCi, Enhanced Programmes and Interactive Advertising

DART is conducted using a nationally representative panel of 4,000 adult and provides robust tracking data on all of the above topics. Included in the study are questions asking respondents on their attitudes to the installation of new equipment when the analogue system is switched off. As well as looking at how the total UK population uses digital media, DART also provides a closer look at specific groups within the UK, highlighting any significant differences between one group and another. These groups include those with Digital TV, those with DAB radio and those with PVRs.

B.3 Findings

Profiling Those with Difficulty in Using Digital Television

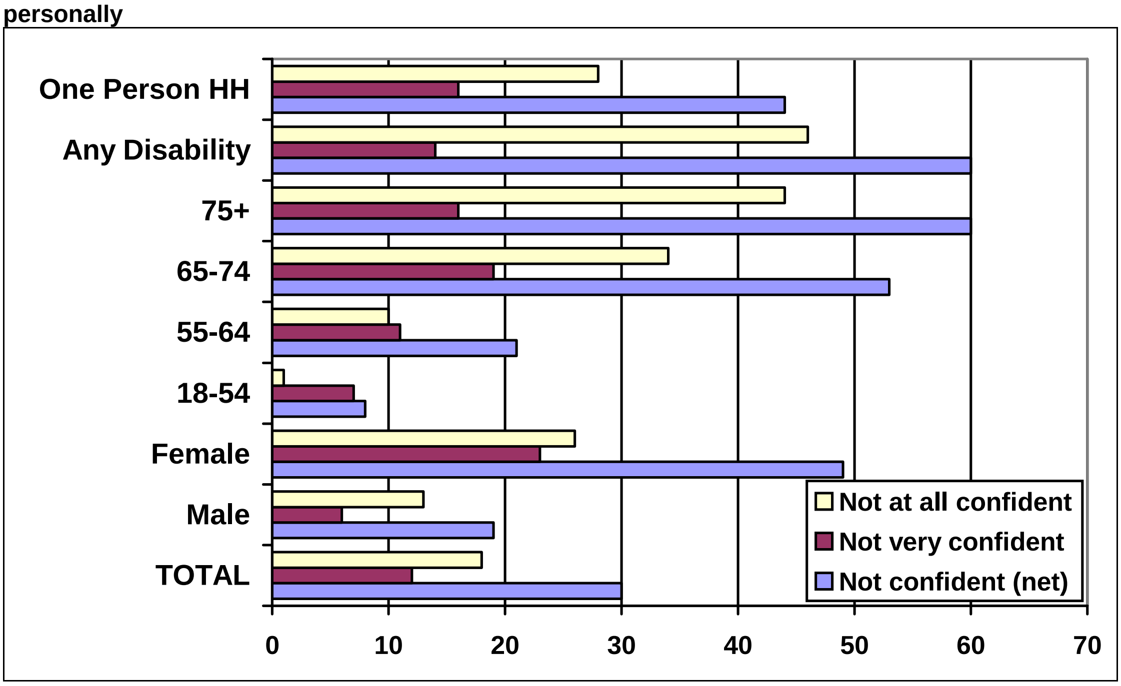
In order to understand who has difficulty with digital television, profiles of the following consumers are provided from the Ferryside and Llansteffan research:

- Those with low confidence in their ability to install equipment
- Those that needed help installing equipment
- Those that found installation difficult
- Those that found using the digital equipment difficult

Confidence

At the beginning of the Welsh trial (before the analogue signal was switched off) respondents were asked how confident the were that they personally would be able to install the digital equipment. Overall, 30% of respondents felt either not very or not at all confident that they would be able to install the equipment themselves. The profile of those either not very or not at all confident is shown below:

Chart 1: Profile of those who were not confident they would be able to tackle the installation personally



Pre-Wave Questionnaire – Q1b. Base: All respondents who have digital installed in their home (214)

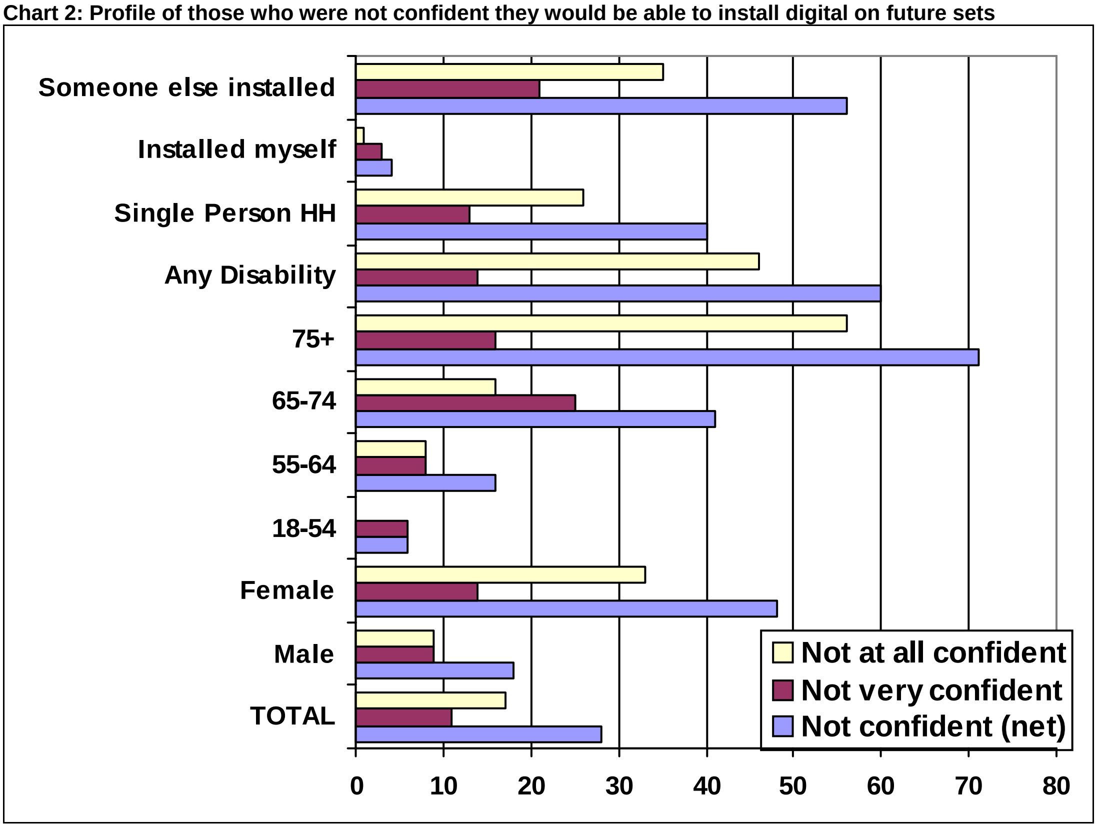
From this, women, those aged over 65, those in a single person household and the disabled have the lowest confidence in themselves when it comes to installation. However, care should be taken when examining these results as it is the case that there is a much higher proportion of female respondents in single person households than men (46% of women compared to 26% of men). However, it is the case that single female households have low confidence in their abilities.

Although sample sizes are very small (only four blind or partially sighted respondents) data would suggest that the deaf have more confidence in installation than the blind/partially sighted or physically disabled.

Respondents were also asked if they were confident that someone else in their household would be able to install the equipment. Amongst the total sample, confidence in the ability of at least one household member to install the equipment was high at 63%, with over one in five feeling very confident that the household was up to the task. Male respondents expressed greater confidence than women (69% very or fairly confident vs. 48% of women). There were stark differences by age, with 31% of those aged 18-54 feeling very confident, 22% of those aged 55-64, 13% of those aged 65-74 and 9% of the group aged 75 or over. In line with this decline with age in the highest level of confidence, those expressing the lowest level of confidence rises from 4% amongst the 18-54's, to 13% of 55-64's, to 34% of 65-74's, and up to 51% of those aged 75+.

With the experience of installation behind them, respondents were asked how confident they felt that they would be able to install any digital equipment on any new sets in the future without outside help. Amongst all respondents, the level of confidence in being able to install a set-top box without outside help had risen from 63% (when asked how they felt about their household's ability to install the box the first time around) to 71% when asked about the installation on any future sets, with more than double the number now claiming to be 'very confident' (43% to 21% previously). The profile of those that felt either not very or not at all confident was as follows:

Chart 2: Profile of those who were not confident they would be able to install digital on future sets



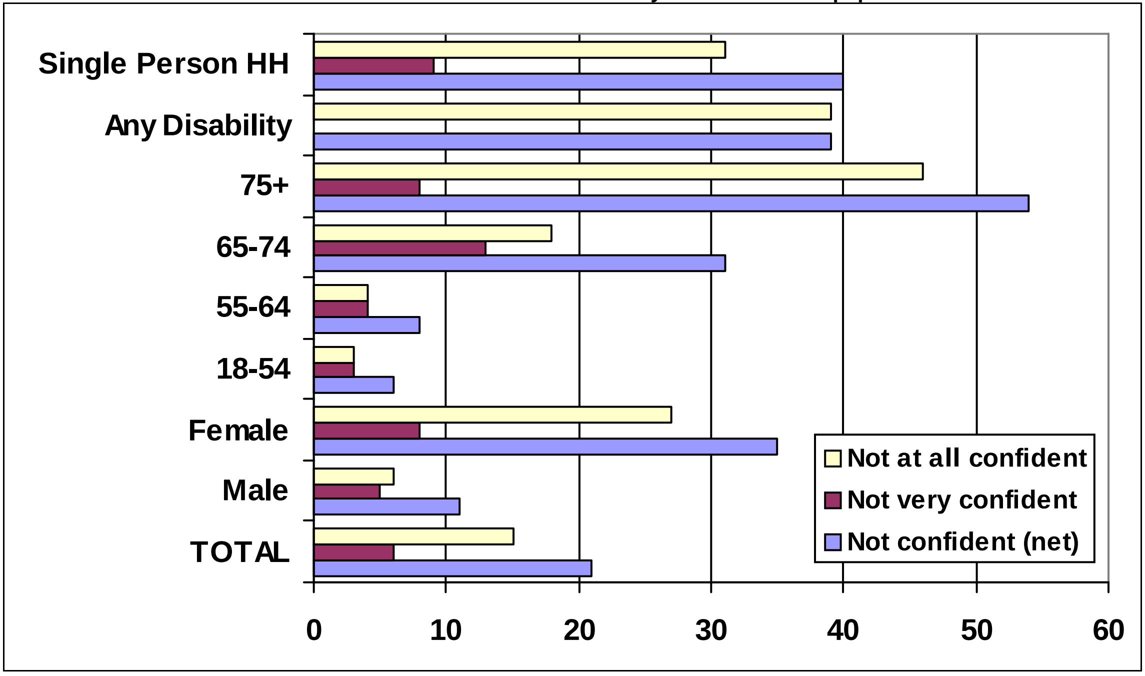
Pre-Wave Questionnaire – Q10. Base: All respondents who have digital installed in their home (214)

Although confidence levels are generally higher following the first installation, those groups that feel less confident remain the same as those that predicted they had less personal confidence – namely women, the over 65's, the disabled and single person households.

Experience is a powerful confidence builder. Of those that conducted the installation themselves, 96% argued that they would feel very or quite confident in conducting the installation again. Even one in three of those that had called in the trial team to help with the first installation felt confident that they would be able to tackle the installation themselves in the future. Therefore, if digital has previously been installed successfully, it would seem that less help is needed for subsequent sets.

Although not a directly comparable task, it is interesting to note that the level of confidence that respondents felt in tackling the re-scanning their set-top boxes after switchover without outside help, was very similar to that noted above relating to the predicted confidence for future installation of set-top boxes, and therefore higher than their initial confidence about tackling the first installation stage. Whilst 40% felt very confident that at least one person in their household would be able to complete the re-scan, 72% were confident to any degree. As before, confidence diminished with age, with 46% of those aged 75+ claiming to be not at all confident that at least one person in their household would be up to the job. Those aged 75+ were the least likely to feel confident that their household would be able to re-scan the equipment (8% very confident, 32% confident to any degree and 46% not at all confident). The level of "not at all confident" amongst vulnerable groups, as defined by the research (aged over 75 and/or disabled) does actually reduce slightly at each of three stages outlined above, from 47% "not at all confident" at the earliest stage, to 41% predicted not at all confident for future installations to 36% not at all confident about the re-scan. The graph below presents a profile of those who were not very or not at all confident that at least one person in their household would be able to re-scan the equipment:

Chart 3: Profile of those not confident in their household's ability to re-scan the equipment



Post-Wave Questionnaire – Q1. Base: All respondents (195)

As part of the analogue switch-off, all households had to re-tune their digital set-top boxes. The overall impression from the digital team was that the switch-off had been very smooth and this was borne out by the comments from all the residents interviewed, as one of them said:

"I haven't heard of anyone with problems."
Female, Ferryside

Those people that felt able to tune their own set-top boxes had followed the written instructions for their specific model without much difficulty:

"I just followed the instructions and it worked."
Female, Ferryside

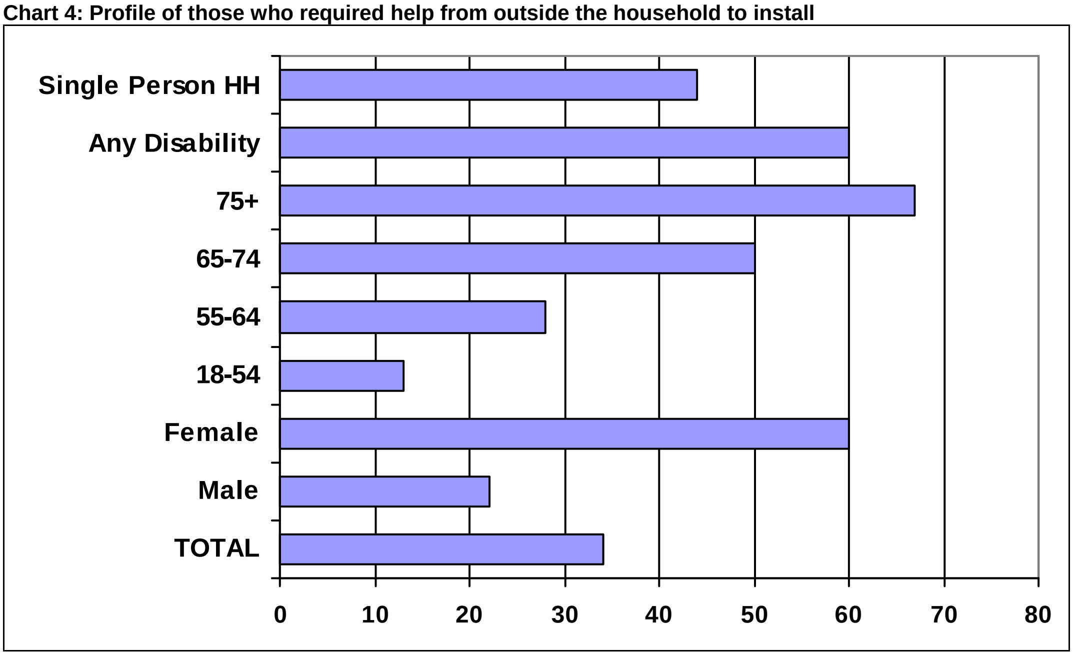
Partly this was due to the fact that the instructions had been written in a very accessible style:
"The good thing was that the instructions were written in plain English."
Male, Llansteffan

Those residents that felt unable to re-tune the set-top box themselves had asked for and received help:
"They came to re-tune it for me and they have been absolutely marvellous – they couldn't be bettered."
Female, Ferryside

Assistance Required

Respondents were asked who actually installed the set-top-box in their household. Over half installed the box themselves, with just over one in three requiring assistance from somebody outside their household. The profile of those requiring help from outside the house was as follows:

Chart 4: Profile of those who required help from outside the household to install



Pre-Wave Questionnaire – Q3. Base: All respondents who have digital installed in their home (214)

Although women are much less likely to claim that the task was completed within their household, this reflects the much higher proportion of female respondents in single person households than men (46% of women vs. 26% of men). This highlights the fact that the household respondent for most of the liaison during the trial was male and that women were more likely to be the respondent only when either there was no man in the household or where the male household member was not the most suitable person to liaise with the trial team. From this, single female households may require further help with the installation process.

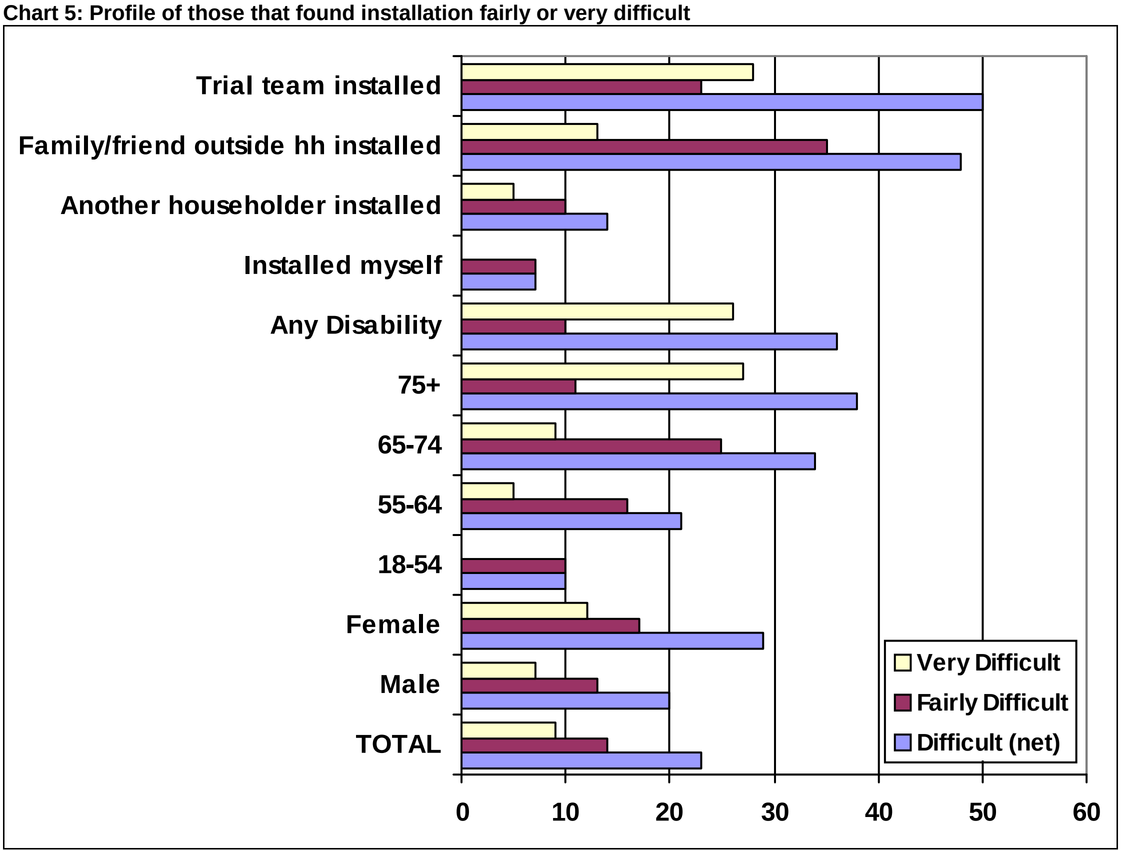
A very similar proportion of respondents needed help from outside the home with re-scanning the equipment (34%). The trial team was by far the biggest resource used for re-scanning, indicating a bigger need for more formal help for re-scanning than installation (27% used the trial team for re-scanning compared to 19% for installation). The profile of those that needed help with re-scanning is very similar to those that needed help with installation, with those over 75 (89%), women (50%) and those in single person households (51%) needing the most help from outside sources.

Only 37% of respondents argued that they needed no help at all when installing their set-top boxes, with a further 29% saying that some help was needed and 32% arguing that a lot of help was needed. Women were much more likely than men to claim that they needed quite a lot of help (57%), as were those aged 75+ (67%). In terms of those with disabilities, the deaf or hard of hearing were least likely to argue that they needed quite a lot of help (54%) with all of the blind and 70% of those with 'other' disabilities requiring help. However, sample sizes are very small here and care should be taken when interpreting this data.

Ease of Installation

Respondents were asked how easy they found the installation. Around one quarter (23%) argued that installation was either fairly or very difficult. The profile of those that found it very or quite difficult is as follows:

Chart 5: Profile of those that found installation fairly or very difficult



Pre-Wave Questionnaire – Q7. Base: All respondents who have digital installed in their home (214)

In line with previous findings, those aged over 65, those with any disability and women are most likely to find the installation process fairly difficult or very difficult. The majority of those that installed the equipment themselves did not find installation difficult, indicating that the expectation of being able to install the equipment matches the level of ease with which this is carried out.

Ease of Use
Respondents were also asked, both at the beginning of the trial when they had little experience of digital television and at the end of the trial when they were much more experienced, how easy they found it to use various aspects of digital television, including:

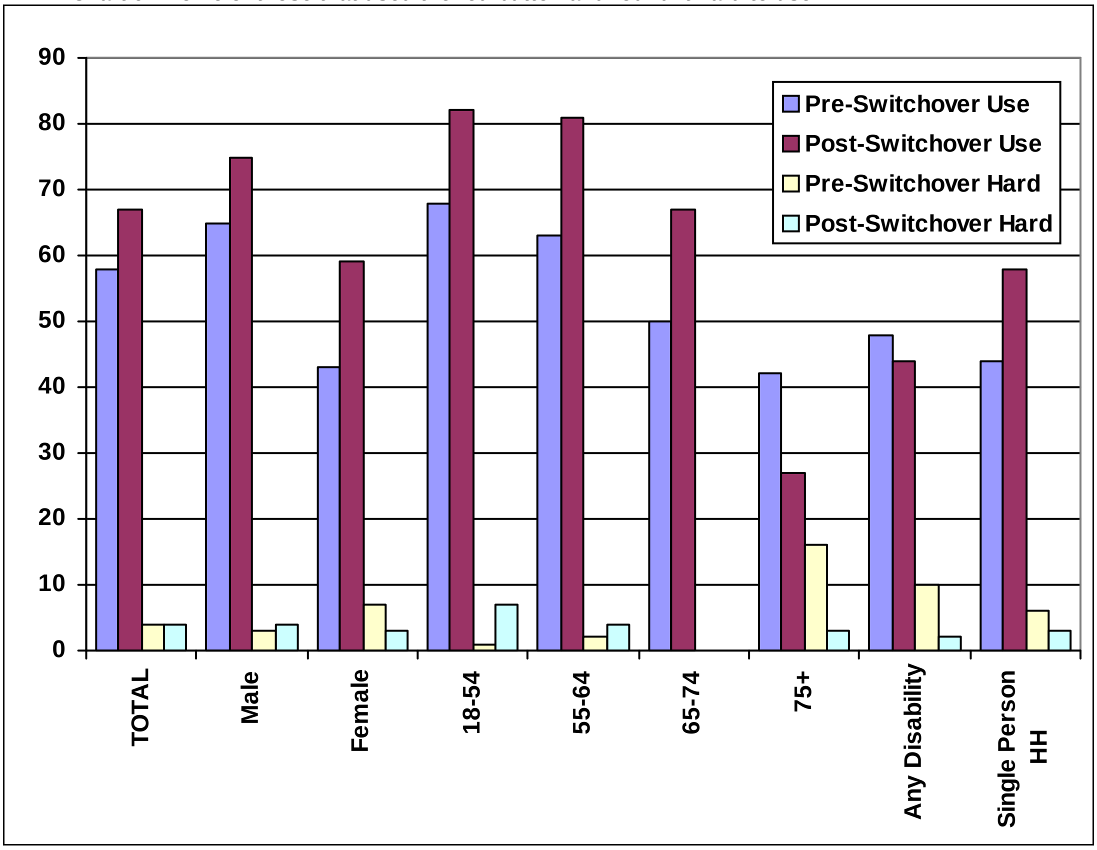
- The red button
- The Electronic Programme Guide (EPG)
- The Remote Control
- Recording Functions
- Digital Text.

Each of these functions will be examined in turn, in terms of proportion who had tried them at the beginning and end of the trial and ease of use (again, at the beginning and end of the trial).

The Red Button

At the beginning of the trial (before analogue had been switched off) 58% of respondents had ever pressed the red button. After switchover, 67% of respondents had pressed the red button.

Chart 6: Profile of those that used the red button and found it hard to use



Pre-Wave Questionnaire – Q12. Base: All respondents who have digital installed in their home (214)
Post-Wave Questionnaire – Q15. Base: All respondents (195)

Generally, the majority of respondents found the Red Button easy to use and over half of all respondents used it during the trial. However, usage does diminish with age, with only a quarter of those aged 75 or over claiming to have used the red button after switchover. Usage was also significantly higher amongst men (65%) than by women (43%), and amongst 18-54's (68%) more so than older people (63% of those aged 55-64 and just 45% of those aged 65+).

Usage of interactive TV is also declining in our DART study. In July 2005, we found that just under a third of those with either Sky digital or digital cable have claimed not to use any interactive services. The main reason being sheer lack of interest, with nearly half of those who have never tried interactive TV services claiming not to be interested in them.

However, in the Welsh trial amongst its total users use of the red button was perceived almost universally as easy to a greater or lesser extent, those pronouncing it difficult falling almost entirely within the oldest age group and/or disabled people.

Insight into how the elderly were using interactive services was provided by the qualitative research. Amongst the mostly elderly respondents, use of the interactive services was varied. While most respondents were not using it, more had certainly given it a go, even if they subsequently rejected it:

"I have tried interactive, but can't see a lot of point to it."

Male, Ferryside

But two of the households visited were using interactive to keep track of the progress of the World Snooker Championships that were on the television at the time of the interviews:

"I have been using it to get into the snooker and you can pick which match to watch."

Male, Llansteffan

"I've been watching the snooker with the interactive – my son showed me how to do it."

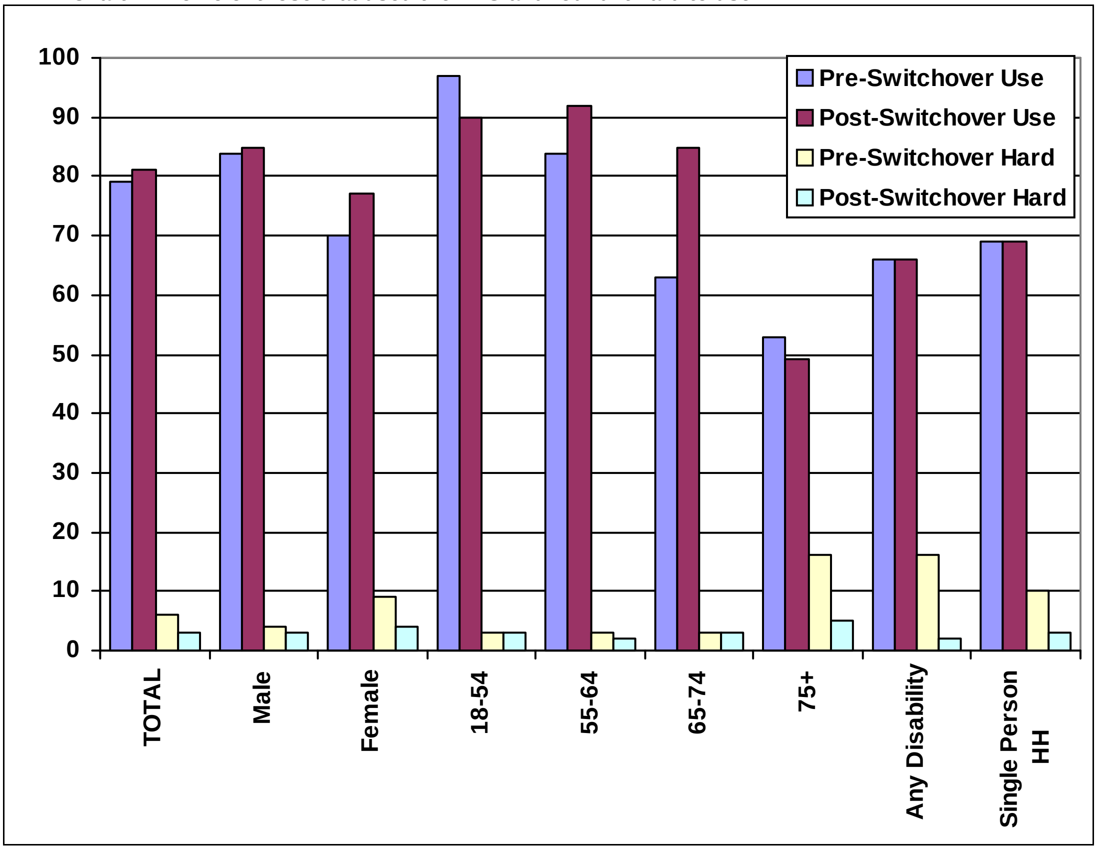
Male, Llansteffan

Interestingly the latter respondent who was well into his 80's had been shown how to access the snooker by his son who knew about the interactive service, but he was now very confident with how to do it for himself.

The Electronic Programme Guide

The majority of respondents had already used the EPG before the switchover (79%) and this figure rose to 81% after the trial.

Chart 7: Profile of those that used the EPG and found it hard to use



Pre-Wave Questionnaire – Q12. Base: All respondents who have digital installed in their home (214)
Post-Wave Questionnaire – Q15. Base: All respondents (195)

The electronic programme guide (EPG) was generally well used and liked, with 79% usage and 73% rating it as easy to use, perhaps surprising in view of the much lesser familiarity of the concept for those who have not previously been exposed to digital TV in their own home. These figures compare well with those found in the October 2005 wave of DART, where we found that nine out of ten digital satellite or cable users know how to use the On Screen Guide, with higher know-how amongst Sky digital subscribers (94%) than cable (77%). It is used on every viewing occasion by 43% and as and when needed by a further third.

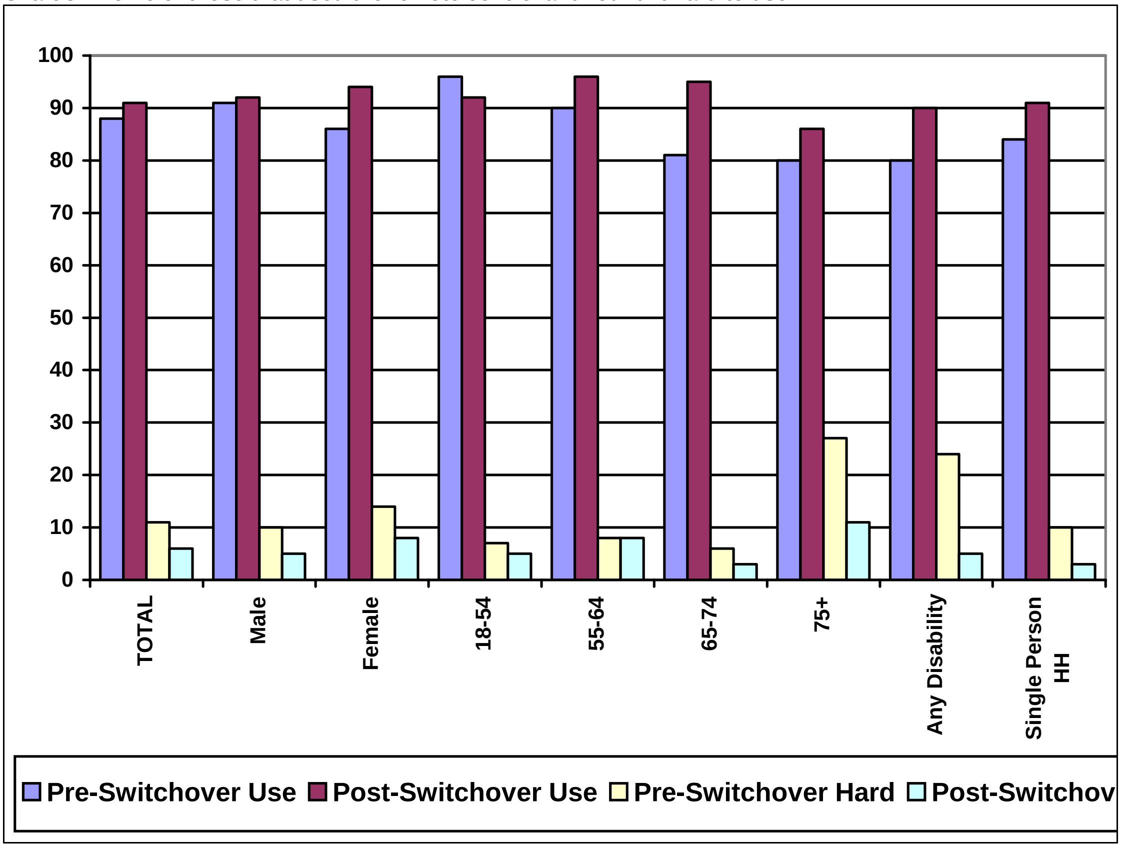
Again, during the Welsh trial, the oldest age group and disabled respondents were significantly less likely to see the EPG as easy to use than others (49% vs. 85%).

This was illustrated well by the qualitative research. At our second visit in April, residents were now much more confident about using their digital equipment, but were still mostly using limited approaches to their use. For example, many were still moving channels by putting in channel numbers, rather than by using arrows on the handset. Many were not using the EPG or the schedules and very few seemed aware of the information or i button on their handset.

The Remote Control

Unsurprisingly, both before and after switchover, most respondents had used the remote control (88% before and 91% after).

Chart 8: Profile of those that used the remote control and found it hard to use



Pre-Wave Questionnaire – Q12. Base: All respondents who have digital installed in their home (214)
Post-Wave Questionnaire – Q15. Base: All respondents (195)

The digital remote control was used by 88% of respondents, with 46% pronouncing its use very easy and 31% fairly easy, but with the usual patterns relating to gender, age and disability. Whilst the majority of respondents in the oldest age group did make use of the remote control, only around half found its use easy.

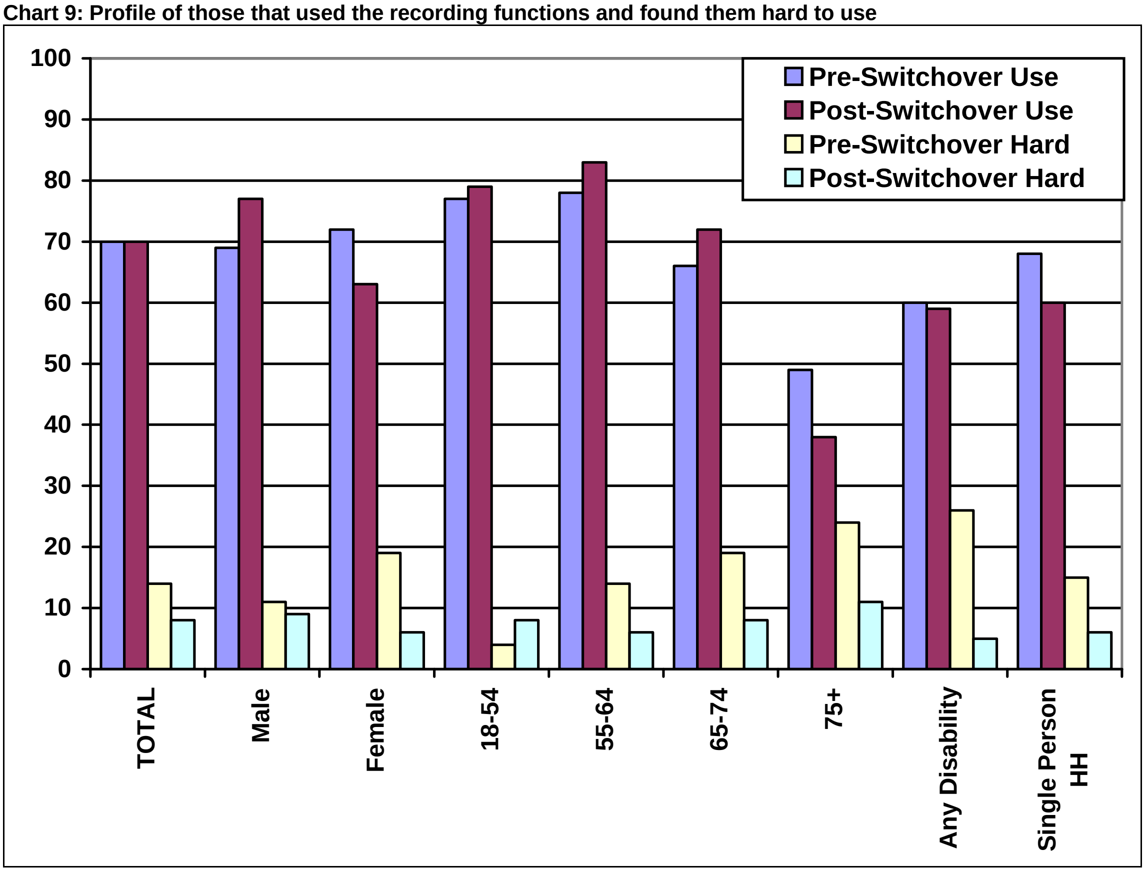
The problems the elderly and disabled had with the remote control were illustrated well by the qualitative research where we found that the often have problems handling small controls and in reading small type. In the case of EPG remote controls, they are expected to do both and this does compound the problem of learning to get the most out of their digital television. In fact, in the case of one elderly lady we visited, it had actually prevented her getting started at all. In the first phase, she was still watching analogue television in her living room, while the set-top box in her bedroom had frozen, requiring a call to the help desk for advice on how to re-set it. She had poor vision and found it difficult to read the wording on the various keys of the remote, such as 'list' 'guide' 'menu' 'i' 'OK' 'text' 'opt' 'back' 'exit'. And of course, there is the additional problem of understanding what each of them does and what the difference is between them – for example the difference between 'list' 'guide' and 'menu'. And that assumes that you have located the various buttons on the remote control in the first place. At the very least, it would be helpful for manufacturers to provide a large-scale diagram of the handset, but the ideal would be more ergonomically designed handsets and in particular a large type handset (cf large type telephones) for the elderly and the visually impaired. It would also be particularly helpful to have a 'home' button that would bring the user back to the opening screen. An elderly user with a recently installed set-top box in another research exercise switched on her television after her grandchild had been visiting and found that it was set to interactive games and she could not find out how to 're-set' the television to its normal mode. It required a phone call and a patient step by step explanation from her seven year old grandson to get her back to the television channel she wanted to watch.

By the second phase, people had grown more confident in their use of the digital channels but the poor layout and design of the handsets meant that they were still very much confined to using the few controls they knew how to use. Over time, if anything, they had grown less aware of the other buttons or controls on the handset. They seemed surprised when we showed them some of the buttons on their handsets, registering them as though for the first time. To be fair, this is probably no different to their approach to their television remote control or their VCR. Having learnt the basics, most people mentally ignore the buttons or controls that they don't use. They are open to learning new ways of doing things or new buttons to press, but they need to be shown how to do it. After the first few days or weeks, they are no longer in exploratory mode.

Recording Functions

Both before and after switchover 70% of respondents claimed to have used the recording functions since they installed digital television.

Chart 9: Profile of those that used the recording functions and found them hard to use



Pre-Wave Questionnaire – Q12. Base: All respondents who have digital installed in their home (214)
Post-Wave Questionnaire – Q15. Base: All respondents (195)

Recording functions were used by 70% of respondents before switch-off, with a significant decline in usage from the age of 65, as well as a significant second drop from the age of 75. These functions were declared "easy to use" by 56%, with the familiar pattern of the greater the age, the greater the difficulty. Again, appreciation and understanding of the recording functions diminished with age.

It is interesting to note that the recording function was actually perceived as harder to use by the youngest age group after the switchover. This could reflect their needs to carry out more complex recording – for example on to a DVD player or the fact that they have more equipment to integrate with digital television. However, sample sizes are small here so results should be treated with caution.

Some respondents were also supplied with PVRs. Although this was not measured in any depth in the quantitative study, we do have some feedback from the qualitative work.

There is no doubt that the PVR was very well received and was generally seen as being very easy to operate:

"One thing I do like is you can just press that once and it will record just that programme."
Male, Llansteffan

And it was noticeable that respondents with a PVR were more at home with the EPG and the TV schedule than other respondents because they needed to use these to select what programmes to record.

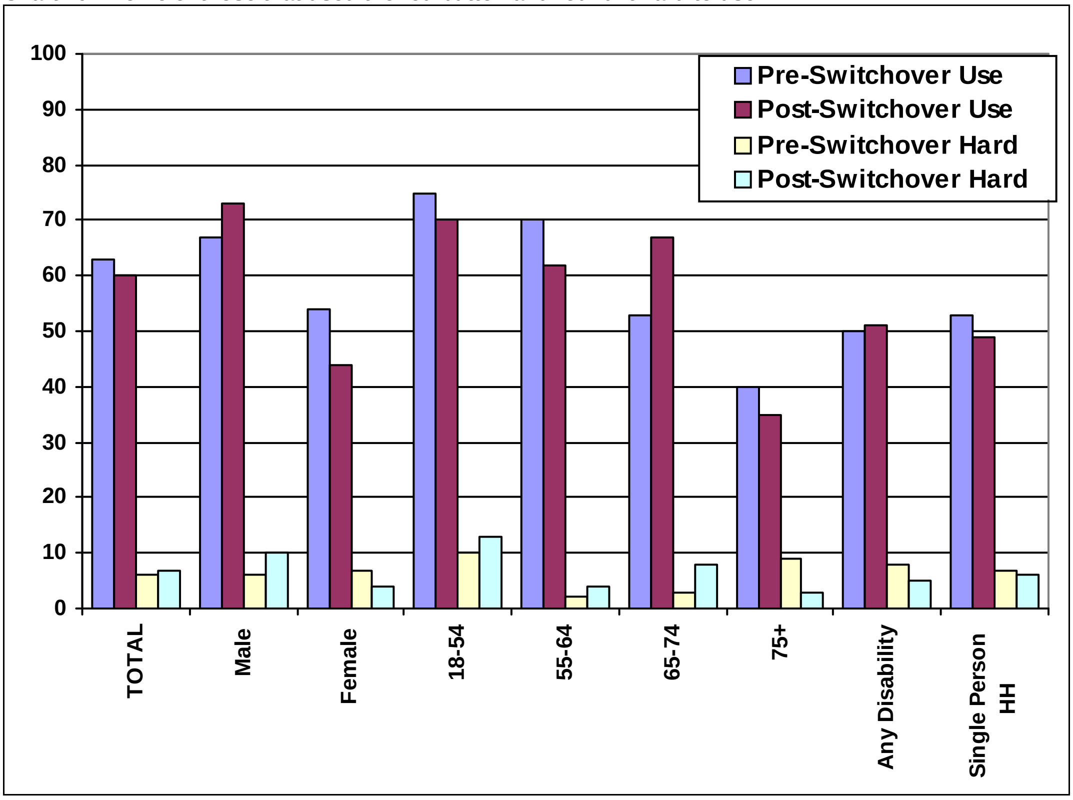
One householder interviewed was having problems with his PVR failing to record programmes fully, but he was the only person to mention this problem and an engineer who called during the interview felt that the problem was mostly likely caused by the position of the household aerial, rather than by the PVR itself.

As the PVR has only a limited memory, at least one respondent was concerned about finding a way to make a copy of programmes he recorded but to date he had tried and failed:

"I have not got the hang of how to transfer a programme from the PVR to a VCR"
Male, Ferryside

Digital Text
Digital text was used by 63%, with the sharpest decline in usage occurring between the 55-64 and 65+ age bands (70% and 45% respectively).

Chart 10: Profile of those that used the red button and found it hard to use



Pre-Wave Questionnaire – Q12. Base: All respondents who have digital installed in their home (214)
Post-Wave Questionnaire – Q15. Base: All respondents (195)

The vast majority of users found digital text easy to use, even in the elderly, although it should be noted that only half of this group had actually used this feature. Digital text was clearly seen as advantageous but was not frequently used, with a third of those aged 75+ claiming not to understand it fully.

Some more in-depth analysis of the issues associated with digital text can be found in the qualitative work where a few had tried interactive teletext, but no-one was really using it. One respondent thought it was too cumbersome to use:

“Not as good as conventional teletext because you have to go through a lot of menus.”
Male, Ferryside

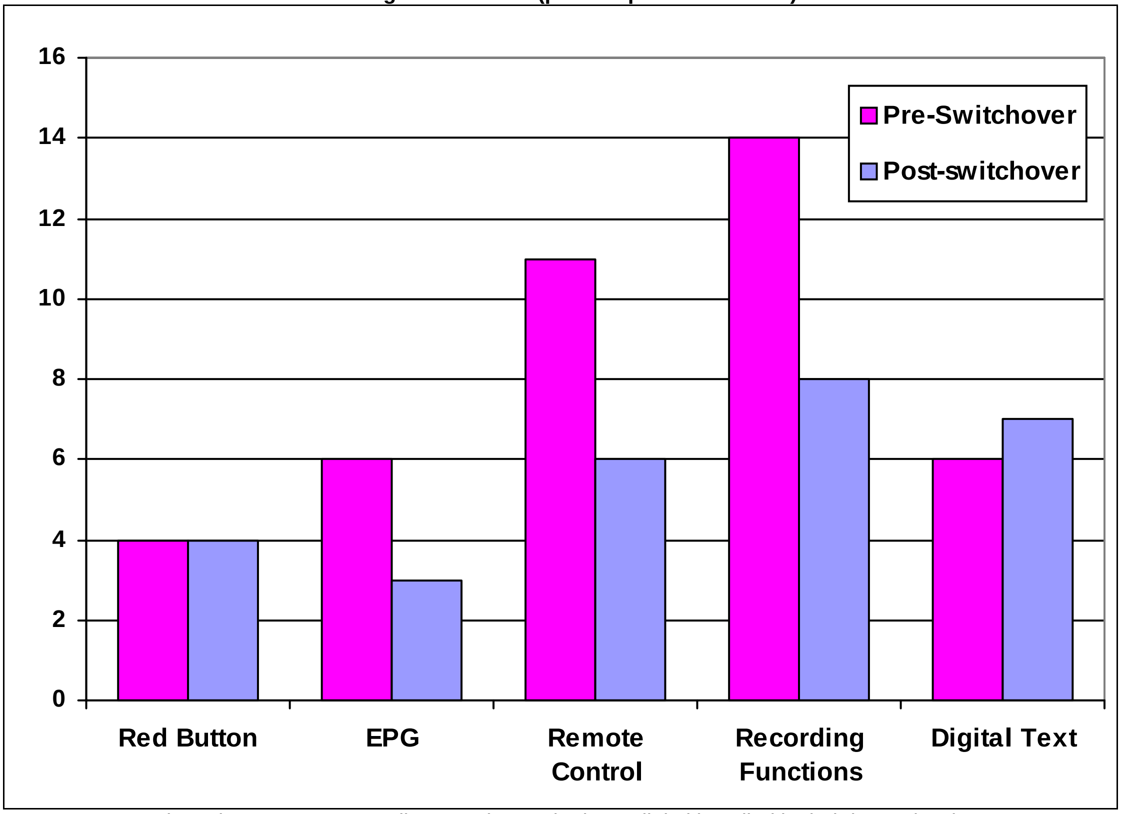
While a respondent with poor eyesight rejected it on the grounds of poor readability:

“It is harder to read on the screen than it is to read the printed word because of the choice of background colours.”
Female, Ferryside

B.4 Most taxing elements of digital television

To conclude this appendix, it is worth examining which aspects of digital television respondents found most hard to use. The chart below provides the proportion of respondents that found each element of digital television either fairly or very hard to use.

Chart 11: Most difficult elements of digital television (pre and post switchover)

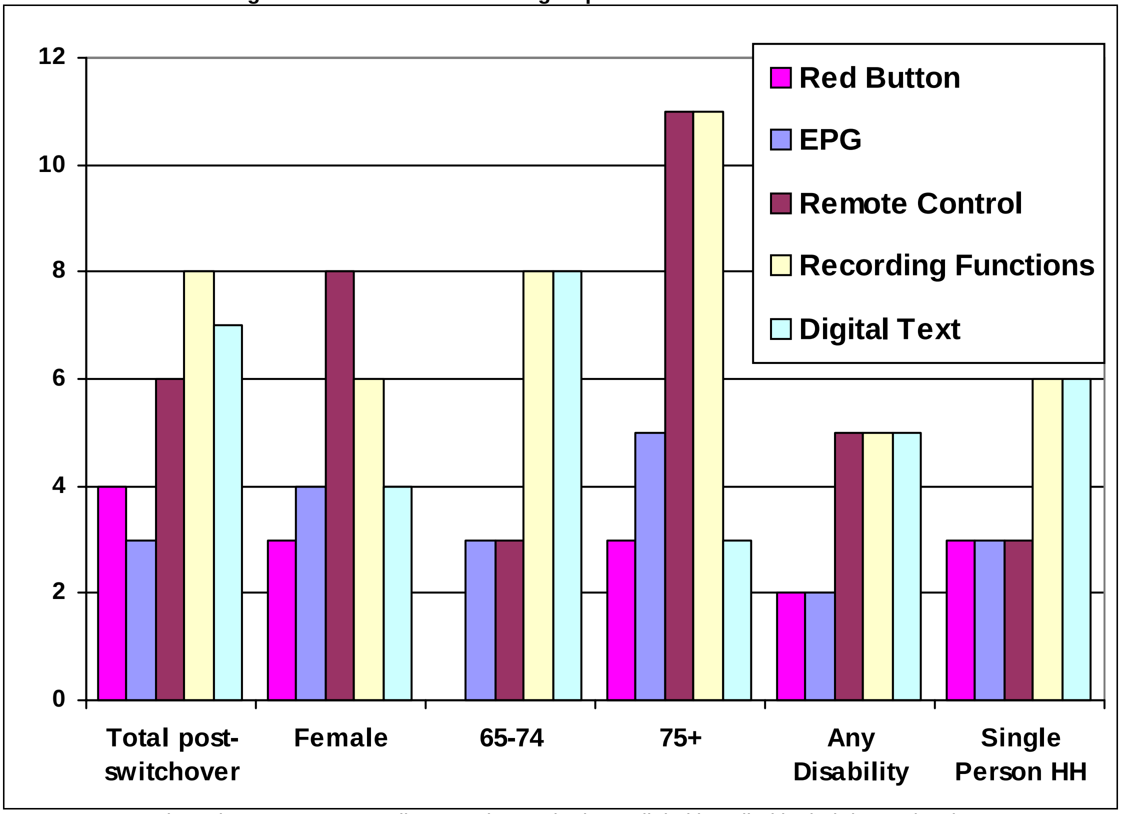


Pre-Wave Questionnaire – Q12. Base: All respondents who have digital installed in their home (214)
Post-Wave Questionnaire – Q15. Base: All respondents (195)

Generally, respondents find all elements of digital television relatively easy to use, with a much higher proportion of respondents rating elements easy to use than rating them hard to use. Overall, the recording functions, the remote control and digital text are perceived as the hardest elements of digital television to use. For all elements (with the exceptions of digital text and the red button) the proportion of respondents finding them difficult to use drops with experience.

The chart below takes each of the groups that have been identified throughout this appendix as having the most difficulty with digital television, that is women, those aged 65+, the disabled and those in singled person households and examines the features which they find most difficult to use (post switchover).

Chart 12: Elements of digital TV the most vulnerable groups find difficult to use



Pre-Wave Questionnaire – Q12. Base: All respondents who have digital installed in their home (214)
Post-Wave Questionnaire – Q15. Base: All respondents (195)

Generally, the pattern for these groups follows that of the population as a whole, with the remote control, recording functions and digital text being the most difficult to use. The remote control seems to cause particular problems for those with disabilities, women and those in the oldest age groups.

Although, on first view, digital text does not seem to cause major problems for women or those aged over 75, this finding tends to reflect the low levels of usage within these groups - only 44% of women and 35% of the over 75s used digital text during the trial. It is not possible to determine whether this is due to difficulty of use, or if digital text is just unappealing to these groups.

B.5 Conclusions

This appendix has examined the profiles of those that had difficulty both installing and using digital equipment during digital switchover trial in Wales. Although it is not advisable to extrapolate results to the whole of the UK from this research, it does provide some indication of the types of issues that may affect specific 'vulnerable' groups in the UK when digital switchover occurs.

When the research was conducted, the DCMS classified the over 75s and/or disabled as 'vulnerable'. From analysis of results, this definition does cover a large proportion of those who may be vulnerable during switchover. However, this report has provided some insight into some of the subtleties that should be taken into account when addressing the needs of those at risk when digital switchover occurs. From the data collected during the Welsh trial, we can begin to argue that:

- Not all the over 75s and disabled have major problems installing and using digital television. Although these groups are more likely to have problems in installing and using the equipment, there are exceptions. There are some circumstances, from both the qualitative and quantitative research, that may help members of these groups to cope with the move to digital television. These include:

  A large amount of family and community support around them

  Watching only small amounts of television before switch-off and little desire for advanced functions.

  Experience in having digital installed on at least one set in the household
- There is generally little need for support of those aged under 55, who are able to install and use all digital equipment largely without difficulty.
- Some of those aged between 65-74 may require assistance, particularly where there is not much community support. However, although this group have little confidence in their ability to install digital television, their confidence increases significantly with experience.
- Women, particularly those that live alone, have little confidence in their ability to install and use digital television. However, they do not necessarily have problems with usage, although it could be argued this is because they are not utilising digital television's advanced functions.

APPENDIX C RESULTS OF SPECIALLY COMMISSIONED QUEST QUESTIONS

Q1 Do you own a set top box that allows you to watch digital television on Freeview?

	Total	Male	Female	16-34	35-54	55+	ABC1	C2DE
UNWEIGHTED BASE	1977	892	1085	397	803	777	1082	895
WEIGHTED BASE	2000	965	1035	599	715	685	999	1001
Yes	692	356	336	239	243	209	378	314
	35%	37%	32%	40%	34%	31%	38%	31%
No	1272	597	675	353	464	455	603	669
	64%	62%	65%	59%	65%	66%	60%	67%
Not answered	36	12	25	7	8	21	18	18
	2%	1%	2%	1%	1%	3%	2%	2%

Q2 If you were to buy a new set top box to get digital television on Freeview, how important would each of the following be to you? Please give each aspect a score from 1-4 with 1 being not at all important and 4 being very important?

Ease of use	Total	Male	Female	16-34	35-54	55+	ABC1	C2DE
UNWEIGHTED BASE	1977	892	1085	397	803	777	1082	895
WEIGHTED BASE	2000	965	1035	599	715	685	999	1001
(0) 1 Not at	76	39	37	16	24	37	28	48
all important	4%	4%	4%	3%	3%	5%	3%	5%
(33) 2	185	102	83	84	58	44	83	102
	9%	11%	8%	14%	8%	6%	8%	10%
(66) 3	440	253	187	183	154	103	240	200
	22%	26%	18%	30%	22%	15%	24%	20%
(100)4 Very	1195	524	671	293	447	456	600	595
important	60%	54%	65%	49%	62%	66%	60%	59%
Important (Net)	1635	777	858	475	601	559	839	796
	82%	80%	83%	79%	84%	82%	84%	80%
Not important	262	141	120	99	82	81	111	151
(Net)	13%	15%	12%	17%	11%	12%	11%	15%
Mean	81.54	78.92	84	76.72	83.17	84.14	82.64	80.44
Not answered	103	47	56	25	33	46	49	54
	5%	5%	5%	4%	5%	7%	5%	5%

Advanced technology	Total	Male	Female	16-34	35-54	55+	ABC1	C2DE
UNWEIGHTED BASE	1977	892	1085	397	803	777	1082	895
WEIGHTED BASE	2000	965	1035	599	715	685	999	1001
(0) 1 Not at	211	75	137	32	61	118	102	109
all important	11%	8%	13%	5%	9%	17%	10%	11%
(33) 2	519	204	314	172	190	156	266	253
	26%	21%	30%	29%	27%	23%	27%	25%
(66) 3	687	349	337	214	266	207	373	314
	34%	36%	33%	36%	37%	30%	37%	31%
(100)4 Very	460	286	175	163	161	137	201	260
important	23%	30%	17%	27%	22%	20%	20%	26%
Important (Net)	1147	635	512	376	427	344	574	573
	57%	66%	49%	63%	60%	50%	57%	57%
Not important	730	279	451	205	251	274	368	362
(Net)	37%	29%	44%	34%	35%	40%	37%	36%
Mean	57.79	63.86	52.02	62.07	58.83	52.62	56.77	58.81
Not answered	123	51	72	19	37	67	57	66
	6%	5%	7%	3%	5%	10%	6%	7%

Large number of channels	Total	Male	Female	16-34	35-54	55+	ABC1	C2DE
UNWEIGHTED BASE	1977	892	1085	397	803	777	1082	895
WEIGHTED BASE	2000	965	1035	599	715	685	999	1001
(0) 1 Not at	224	93	132	28	51	145	116	108
all important	11%	10%	13%	5%	7%	21%	12%	11%
(33) 2	391	177	214	90	141	159	210	181
	20%	18%	21%	15%	20%	23%	21%	18%
(66) 3	659	337	322	234	249	176	346	313
	33%	35%	31%	39%	35%	26%	35%	31%
(100)4 Very	611	312	299	226	239	146	277	334
important	31%	32%	29%	38%	33%	21%	28%	33%
Important (Net)	1269	649	620	459	488	322	622	647
	63%	67%	60%	77%	68%	47%	62%	65%
Not important	615	269	346	118	193	304	326	289
(Net)	31%	28%	33%	20%	27%	44%	33%	29%
Mean	62.32	64.55	60.21	70.93	66.1	50.28	60.55	64.12
Not answered	116	47	69	22	35	59	51	65
	6%	5%	7%	4%	5%	9%	5%	6%

Electronic programme guide (EPG) to tell you what is on	Total	Male	Female	16-34	35-54	55+	ABC1	C2DE
UNWEIGHTED BASE	1977	892	1085	397	803	777	1082	895
WEIGHTED BASE	2000	965	1035	599	715	685	999	1001
(0) 1 Not at all important	242 12%	109 11%	133 13%	23 4%	76 11%	142 21%	108 11%	133 13%
(33) 2	440 22%	188 20%	251 24%	110 18%	154 22%	176 26%	235 24%	204 20%
(66) 3	625 31%	308 32%	317 31%	206 34%	256 36%	163 24%	320 32%	304 30%
(100)4 Very important	571 29%	305 32%	266 26%	234 39%	198 28%	140 20%	277 28%	295 29%
Important (Net)	1196 60%	613 64%	583 56%	439 73%	453 63%	304 44%	597 60%	599 60%
Not important (Net)	681 34%	297 31%	384 37%	133 22%	230 32%	318 46%	343 34%	338 34%
Mean	60.13	62.69	57.72	70.86	61.03	49.25	60.15	60.11
Not answered	123 6%	55 6%	68 7%	27 4%	32 4%	64 9%	59 6%	64 6%

Interactive features such as the red button	Total	Male	Female	16-34	35-54	55+	ABC1	C2DE
UNWEIGHTED BASE	1977	892	1085	397	803	777	1082	895
WEIGHTED BASE	2000	965	1035	599	715	685	999	1001
(0) 1 Not at all important	396 20%	177 18%	219 21%	83 14%	149 21%	163 24%	193 19%	202 20%
(33) 2	632 32%	294 30%	338 33%	198 33%	230 32%	204 30%	327 33%	305 30%
(66) 3	545 27%	278 29%	268 26%	186 31%	201 28%	158 23%	283 28%	262 26%
(100)4 Very important	300 15%	156 16%	143 14%	106 18%	97 14%	97 14%	136 14%	164 16%
Important (Net)	845 42%	434 45%	411 40%	292 49%	298 42%	255 37%	419 42%	426 43%
Not important (Net)	1027 51%	471 49%	556 54%	282 47%	379 53%	367 54%	520 52%	508 51%
Mean	46.37	48.25	44.6	51.29	45.13	43.17	45.85	46.89
Not answered	128 6%	60 6%	68 7%	25 4%	39 5%	64 9%	61 6%	67 7%

Digital text	Total	Male	Female	16-34	35-54	55+	ABC1	C2DE
UNWEIGHTED BASE	1977	892	1085	397	803	777	1082	895
WEIGHTED BASE	2000	965	1035	599	715	685	999	1001
(0) 1 Not at all important	359 18%	162 17%	197 19%	90 15%	120 17%	149 22%	181 18%	178 18%
(33) 2	643 32%	285 30%	358 35%	185 31%	250 35%	208 30%	341 34%	302 30%
(66) 3	565 28%	282 29%	283 27%	197 33%	206 29%	162 24%	273 27%	292 29%
(100)4 Very important	301 15%	177 18%	124 12%	99 16%	101 14%	101 15%	143 14%	158 16%
Important (Net)	866 43%	459 48%	407 39%	296 49%	308 43%	262 38%	416 42%	450 45%
Not important (Net)	1002 50%	447 46%	556 54%	275 46%	370 52%	357 52%	522 52%	480 48%
Mean	47.43	50.47	44.56	50.76	47.23	44.57	46.43	48.44
Not answered	131 7%	59 6%	72 7%	28 5%	37 5%	66 10%	61 6%	71 7%

Subtitling	Total	Male	Female	16-34	35-54	55+	ABC1	C2DE
UNWEIGHTED BASE	1977	892	1085	397	803	777	1082	895
WEIGHTED BASE	2000	965	1035	599	715	685	999	1001
(0) 1 Not at all important	681	332	349	184	259	238	351	330
	34%	34%	34%	31%	36%	35%	35%	33%
(33) 2	673	314	359	231	247	194	335	338
	34%	33%	35%	39%	35%	28%	34%	34%
(66) 3	327	155	172	102	107	118	172	156
	16%	16%	17%	17%	15%	17%	17%	16%
(100)4 Very important	187	104	83	51	66	70	83	103
	9%	11%	8%	8%	9%	10%	8%	10%
Important (Net)	514	258	256	152	173	189	255	259
	26%	27%	25%	25%	24%	28%	26%	26%
Not important (Net)	1354	647	708	415	506	433	686	668
	68%	67%	68%	69%	71%	63%	69%	67%
Mean	33.45	34.21	32.73	34.17	32.12	34.23	32.64	34.26
Not answered	132	60	72	31	36	64	58	74
	7%	6%	7%	5%	5%	9%	6%	7%

Audio description	Total	Male	Female	16-34	35-54	55+	ABC1	C2DE
UNWEIGHTED BASE	1977	892	1085	397	803	777	1082	895
WEIGHTED BASE	2000	965	1035	599	715	685	999	1001
(0) 1 Not at	695	339	356	209	253	233	373	322
all important	35%	35%	34%	35%	35%	34%	37%	32%
(33) 2	774	368	406	268	289	218	391	384
	39%	38%	39%	45%	40%	32%	39%	38%
(66) 3	270	127	143	67	99	104	122	147
	13%	13%	14%	11%	14%	15%	12%	15%
(100)4 Very	114	73	41	32	29	52	46	67
important	6%	8%	4%	5%	4%	8%	5%	7%
Important (Net)	383	199	184	99	128	156	169	214
	19%	21%	18%	17%	18%	23%	17%	21%
Not important	1469	708	762	477	542	450	763	706
(Net)	73%	73%	74%	80%	76%	66%	76%	71%
Mean	29.53	30.64	28.46	28.61	28.32	31.73	27.46	31.62
Not answered	148	58	90	23	45	80	67	80
	7%	6%	9%	4%	6%	12%	7%	8%

Q3 A manufacturer of set top boxes is thinking of designing a ‘simple to use’ set top box which would have fewer channels and features than a standard set top box (which has over 40 channels). The remote control could therefore have fewer buttons and there would be no need for menus (A menu uses the remote control in combination with choices displayed on the TV screen in order to select channels and functions.)

Would you choose to buy such a ‘simple to use’ set top box instead of a standard one even if it had fewer channels and features?

	Total	Male	Female	16-34	35-54	55+	ABC1	C2DE
UNWEIGHTED BASE	1977	892	1085	397	803	777	1082	895
WEIGHTED BASE	2000	965	1035	599	715	685	999	1001
Yes	582	242	340	97	184	302	286	296
	29%	25%	33%	16%	26%	44%	29%	30%
No	1354	695	659	495	514	345	682	671
	68%	72%	64%	83%	72%	50%	68%	67%
Not answered	64	28	36	8	17	39	31	33
	3%	3%	3%	1%	2%	6%	3%	3%

Q4 In such a set top box, how many channels would you prefer?

- Just the 5 main channels such as BBC1, BBC2, ITV, Channel 4 or S4C and Five
- The main channels plus 5 more ‘favourites’ that can be chosen when the set top box is installed
- More than 10 channels in total

	Total	Male	Female	16-34	35-54	55+	ABC1	C2DE
UNWEIGHTED BASE	612	246	366	63	211	338	335	277
WEIGHTED BASE	582	242	340	97	184	302	286	296
Just the 5 main channels such as BBC1, BBC2, ITV, Channel 4 or S4C and Five	38 6%	13 5%	25 7%	1 1%	7 4%	30 10%	18 6%	20 7%
The main channels plus 5 more 'favourites' that can be chosen when the set top box is installed	338 58%	125 52%	213 63%	51 52%	93 51%	194 64%	185 65%	152 51%
More than 10 channels in total	201 34%	104 43%	97 28%	45 47%	82 45%	74 24%	83 29%	118 40%
Not answered	6 1%	1 *	5 2%	- -	1 1%	5 2%	- -	6 2%

Q5 In such a set top box, an Electronic Programme Guide (EPG) will allow you to bring up on the screen details of the programmes that are being shown on the various channels. What sort of EPG (electronic programme guide) would you prefer?

- No EPG at all
- A simple guide showing just the current and next programmes
- A guide for the day ahead
- A guide for the next seven days

	Total	Male	Female	16-34	35-54	55+	ABC1	C2DE
UNWEIGHTED BASE	612	246	366	63	211	338	335	277
WEIGHTED BASE	582	242	340	97	184	302	286	296
No EPG at all	72	35	37	3	19	49	36	36
	12%	14%	11%	3%	10%	16%	12%	12%
A simple guide showing just the current and next programmes	221	84	137	32	63	126	108	113
	38%	35%	40%	33%	34%	42%	38%	38%
A guide for the day ahead	175	72	103	33	59	83	84	91
	30%	30%	30%	34%	32%	27%	29%	31%
A guide for the next 7 days	107	50	57	29	42	36	58	49
	18%	21%	17%	30%	23%	12%	20%	16%
Not answered	7	1	6	-	-	7	*	7
	1%	*	2%	-	-	2%	*	2%

APPENDIX D MANUFACTURERS, RETAILERS, CHARITIES AND EXPERTS CONTACTED

RNIB (Leen Petre)

RNID (Guido Gybels)

Age Concern (Gretel Jones)

Help the Aged (David Sinclair)

Dundee University (Alex Carmichael)

Sony (Richard Brown)

Philips (David Johnston)

Alba (John Edwards)

Dixons (Danny Churchill)

APPENDIX E POSSIBLE REALISATION MECHANISMS

Option 1 - Non-intervention: Leave to the market

- Dependent on what retailers think they can sell
- Currently the overwhelming demand is for low cost products. This is tending to drive out any attention to usability and features for consumers who would have difficulty with mainstream products
- There is also a form of market failure in that usability is difficult to assess at point of sale. Remote controls are often not on display.
- We conclude that non-intervention will not lead to significant changes in product usability

Option 2 – Independent testing

- The 'Which Report' approach, exemplified by the Ricability project for the DTI
- Dependent on achieving leverage at point of sale
- An ex-post approach, so unlikely to stimulate innovation in new product concepts
- Minority use products and features would have to be specifically tested

Option 3 – Voluntary standards agreed between manufacturers

- The TEG checklist or the DTG D-Book, for example
- Will tend towards the lowest denominator. Unlikely to stretch product specs and drive innovation
- Voluntary – so may take second place to other considerations
- But 'unobtrusive' standards that are easy to comply with have a chance of acceptance

Option 4 – Standards proposed by others

- The DCMS guide, for example
- May lack commercial realism - danger of being seen as a wish list and not taken seriously
- No obvious mechanism to encourage acceptance
- But 'unobtrusive' standards that are easy to comply with have a chance of acceptance

Option 5 – 'Sponsored' product or demonstrator

- An example was the BBC Micro where the BBC got together with Acorn
- Could RNID, RNIB or Age Concern get together with an STB supplier to jointly develop and promote a particular product variant?

Option 6 - Design competition for a new product

- As used in major architecture projects
- A way of getting a high profile to a product, rather than a straightforward tendering process

Option 7 – Bulk purchase tender

- A good way of achieving a ‘one-off’ result
- But does not incorporate a mechanism to encourage continuous innovation, as is undoubtedly required in the case of DTV equipment.