What's on the telly?

Proposed improvements to EPG accessibility for people with visual impairments

Consultation

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About this document

People with visual impairments watch about as much TV as other people, but face particular difficulties in using on-screen TV programme guides (otherwise known as electronic programme guides or EPGs) to plan their viewing.

As a result, the choice of viewing for people with visual impairments can be unnecessarily restricted, and they may miss out on the opportunities to see the programmes most people take for granted.

This document explains Ofcom's proposals to amend the Code of Practice for EPGs to enable people with visual impairments to make better use of them. Ofcom is seeking feedback from interested parties, which Ofcom will take into account before deciding whether to proceed.

As with most other published Ofcom documents, this consultation is available on Ofcom's website in a version (Portable Document Format) which is compatible with most screen-readers. Because the issues discussed in this document are likely to be of particular interest to people who are blind or visually impaired, we have prepared an audio version of the summary of this document. A link to this can be found at http://www.ofcom.org.uk/static/audio/EPG-accessibility.mp3.

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Section 1

Summary

Introduction

1.1 This consultation document seeks views on Ofcom's proposed changes to the Code of Practice on electronic programme guides (on-screen TV guides otherwise known as 'EPGs') to make EPGs easier to use for the growing number of people with visual impairments. In this document, we use the term 'visually impaired' to refer both to those with partial sight loss, and those who are completely blind.

1.2 Our consultation has been informed by responses to a call for inputs ('CFI') published by Ofcom last year[1], as well as discussions with the Royal National Institute of Blind People ('RNIB') and other stakeholders. We would like to thank respondents for their contributions to the CFI, which helped to shed light on the issues we were examining.

Key points

TV is important to people with visual impairments, but they can find it difficult to make the most of it

1.3 There are an estimated two million people in the UK with visual impairments, and that number is increasing as the population ages. Most have grown up with TV as part of their everyday lives, and continue to watch about as much TV as everybody else. Understandably, people who lose some or all of their sight do not also want to lose the shared experience of watching TV programmes they have always enjoyed.

1.4 Despite this, the choice of viewing for people with visual impairments can be unnecessarily restricted, because they find using on-screen TV programme guides time-consuming at best, and impossible at worst. (e.g. YouView and TalkTalk) While most people take for granted the opportunity to find out about new programmes on channels they are familiar with, or on channels they do not normally watch, this can be challenging for those unable to see the EPG properly, or at all. Inaccessible EPGs can also pose significant obstacles to switching from one TV service to another.

1.5 These difficulties can also mean that visually-impaired viewers miss out on the wide range of programmes with audio description. Audio description is an optional commentary which works by using gaps in the dialogue to describe what is happening on screen. People with visual impairments have told us that they find audio description very helpful to their understanding and enjoyment of TV. Over 70 channels make audio description is available, on many well-known programmes, such as *Coronation Street, East Enders*, *Hollyoaks*, *Neighbours*, and *Game of Thrones*, and a wide range of other programming.

1.6 But finding programmes with audio description can be a challenge. EPGs have to identify programmes with audio description, but viewers may have to search through individual programme details to find out which programmes have it.

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[1] *Speaking TV programme guides: would they help people with visual impairments, and are they feasible?* (CFI), Ofcom, July 2014 (http://stakeholders.ofcom.org.uk/consultations/speaking-tv/)

More accessible EPGs could help visually-impaired people to enjoy a broader range of viewing

1.7 In recent years, some EPGs have begun to include accessibility features that enable people with visual impairments to make better use of them. Examples include high contrast displays, the ability to search for programmes with audio description, the scope to magnify parts of the display or to increase text size and the option to have text in the EPG (such as channel numbers and programme descriptions) read out.

1.8 These features help people with a very wide range of visual impairments, ranging from those with blurred or restricted vision, to those without any useful sight. Unfortunately, very few EPGs include all these tools, and sometimes the tools need improvement to optimise the benefits to users. We think it may now be practicable for EPG providers to improve the usability of EPGs by visually-impaired people by including additional accessibility features.

Ofcom is proposing that EPGs providers should make a wider range of accessibility features available in future

1.9 EPG providers (currently Sky, Virgin, YouView, Freesat, Digital UK for Freeview, BT, EE and TalkTalk) are licensed by Ofcom and are required to ensure that the provisions of Ofcom's Code on EPGs (the 'EPG Code') are observed in the provision of EPGs.

1.10 We are proposing to amend the EPG Code so that it would require EPG providers to adopt additional accessibility features which would help visually impaired people to use EPGs as they are used by those without such disabilities.

1.11 Access to EPGs and to the programmes promoted or listed in EPGs is dependent on the data made available by EPG providers, which is transmitted as a broadcast signal, as well as the hardware and software of TV receivers (TV sets and set-top boxes).

1.12 Specifically, the proposed changes to the EPG Code would require EPG providers that provide or intend to provide EPGs suitable for '**multi-functional TV receivers**' (i.e. those that provide both access to on-demand programming and the facility to record programmes) to use their best endeavours to secure that those TV receivers incorporate the options for users to:

a) render text needed for EPG navigation and the provision of information on channels and programmes included in the EPG as speech ('**text-to-speech**' functionality);

b) highlight or list separately programmes with audio description, and with signing ('**filtering or highlighting**' functionality);

c) adjust the display of EPG information so that it can be magnified, or the text enlarged ('**magnification**' functionality); and

d) switch between the default and 'high contrast' displays[2] (**'high contrast displays'**).

The new rules would not apply to all EPGs, and it would take time for the changes to roll out

1.13 The proposed changes to the EPG Code would apply to EPGs intended for use in 'multi-functional' TV receivers – those that can both record programming and provide access to on-demand content. Such TV receivers are normally more expensive, compared to those without these functions. We think that including additional accessibility features in these may not have a large effect on the price that consumers pay. In practice, this means that the revised Code would affect mainly set top boxes which have both these functions, as integrated TV sets rarely offer all of them. However, we note that two of the major TV manufacturers supplying the UK market, Samsung and Panasonic, already offer these accessibility features in their TV sets.

1.14 By contrast, mandating their inclusion in the cheapest, most basic, TV receivers might result in significant price increases, which could harm the least affluent consumers. Moreover, we doubt that it would be practicable. Both Freeview and Freesat allow TV receiver manufacturers to make use of their trademarks under basic trademark licences, provided they comply with common technical standards. For the reasons explained in Section 3, we do not think that these basic licences give EPG licensees sufficient leverage to secure the proposed accessibility features for EPGs, even relatively expensive TV receivers that make use of basic EPGs.

1.15 Over time, we would expect the cost of the proposed accessibility features to come down further, as the use of the necessary components in TV receivers becomes widespread and the necessary software is commoditised. Eventually, we would expect these accessibility features to become common in basic TV receivers, without the need for large price increases. The same thing happened with audio description: for some years, it was only available with expensive or specialist TV receivers. Now it is a standard feature of most TV receivers, partly because almost all now use the electronic chips needed to make audio description work.

1.16 We also thought about whether we should ask EPG providers to use their commercial influence to get accessibility features included in TV receivers that have already been supplied to consumers. We believe that these changes might be technically possible in some of the more sophisticated receivers that already have the necessary hardware, and might simply require a software update.

1.17 But we do not think that it would be sensible to require this, for two main reasons. First, if an EPG provider has already granted a licence to a manufacturer of set-top boxes to use its trademarks, it might have little leverage to secure additional accessibility features during the validity of that trademark licence. Second, developing technical solutions for a wide range of receivers that have already been supplied to consumers could be a complex and resource-intensive task, with scope for prolonged debate about the feasibility of including accessibility features in particular types of equipment, and the extent to which this could only be done at the expense of removing features used by a wide range of people. We think that this

[2] Displays with a contrast ratio of no less than 7:1, as set out in guideline 1.46 of Web Content Accessibility Guidance 2.0. See: http://www.w3.org/TR/WCAG20

could divert attention and resources away from the development of new TV receivers incorporating the accessibility features.

We would like your views on our proposals

1.18 This document explains our reasoning, and the changes we propose to make to the EPG Code. We would welcome views on these proposals by **5pm** on **30 October 2015**. We will consider all responses and other relevant information before making a decision.

1.19 We will consider all reasonable requests for our publications in alternative formats or other languages. If you would like to make a request, you can call our Advisory Team from Monday to Friday between 09:00 and 17:00 on 020 7981 3040 or 0300 123 3333. If you are deaf or speech-impaired, you can use our textphone numbers, which are 020 7981 3043 or 0300 123 2024.

Section 2

Background

Introduction

2.1 In this section, we:

a) describe the number and circumstances of people with visual impairments, and of older people, who account for the majority of those with visual impairments;

b) summarise the statutory provisions relevant to the accessibility of EPGs;

c) summarise the accessibility features available with many of the most widely used EPGs; and

d) describe Ofcom's recent work to examine the feasibility and desirability of amending the EPG Code to require EPG providers to adopt a wider range of accessibility features.

People with visual impairments

2.2 It was estimated in 2008 that 1.8 million people had partial sight or blindness, of whom just under a quarter (418,810) were under 65 years old, and more than three quarters (1,378,178) were 65 or older. The total of those with partial sight and blindness in the UK is expected to grow to 2,262,124 by 2020, and to over 4 million by 2050[3].

2.3 Much of this growth is expected to arise from the ageing of the population, leading to an increase in the number of people with age-related macular degeneration and cataracts. Other main causes of visual impairment include diabetes retinopathy, glaucoma and refractive error.

2.4 Many programmes can be understood and enjoyed without perfect vision. Some television programmes (e.g. news, documentaries) rely heavily on speech, and some others are accompanied by audio description. Most people with visual impairments will have watched television regularly before their sight was impaired, and will not want to give up a familiar and enjoyable pastime. Indeed, as many are retired, they are likely to have more leisure time, and less money and physical ability to engage in other activities. Television also helps people to cope with social isolation, to which older people are prone.

2.5 These reasons help to explain why people with visual impairments watch about the same amount of TV as everybody else. However, unlike everybody else, they face considerable difficulties in using EPGs to explore the wide range of content available to all viewers. Even those with mild visual impairments face considerable difficulties when using a conventional EPG. In effect, they must work much harder than viewers without sight impairments to decipher and use on-screen information. Depending on the amount and type of vision they have, they may have to:

[3] Further information can be found in Annex 2.

a) sit very close to the screen and use magnification to be able to read information in an EPG;

b) spend longer scanning the screen because of their limited field of vision; and

c) concentrate much harder to work out what they need to know, based on the limited amount of information they can glean.

2.6 It is clear that the difficulties encountered by some people with partial sight are enough to discourage some people from attempting to use conventional EPGs. A study in 2002[4] on how blind and partially-sighted viewers used EPGs found that most participants relied on family or friends to tell them what was on TV, or on their memory of when their favourite programmes were on TV. However, some blind or visually-impaired people must cope by themselves. A recent survey found that visually-impaired consumers were more likely to live alone than non-disabled consumers (25% vs 16%), which may reflect the older age profile[5].

2.7 The impact of visual impairment will also vary according to the personal circumstances of each person. Some people who find using a conventional EPG difficult or impossible may be able to make use of TV guide apps on text to speech (TTS)-enabled mobile devices (e.g. tablets and smartphones).

2.8 However, older people in particular, who account for the majority of those with visual impairments, can face additional barriers to using mobile devices to access television programming. These may include a lack of money or reluctance to buy mobile devices, a lack of confidence in their ability to use these devices, or the obstacles that often accompany ageing, such as a decline in visual and auditory perception, attention span, memory, motor functions and touch sensitivity.

2.9 The overall result is likely to be that many viewers with visual impairments face a restricted choice of viewing. Indeed, a survey carried out in 2008[6] found that people with visual impairments who could not see the EPG tended to watch a more limited repertoire of channels than others. They relied heavily on memorising channel numbers, and had to relearn them when channels were re-ordered.

2.10 We describe in more detail in Annex 2:

a) the number of people with visual impairments;

b) the main causes of visual impairment;

c) the difficulties that visually-impaired people can encounter in using EPGs; and

d) the scope for some people to overcome these difficulties, and the constraints faced by others.

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[4] Mark David Rice. A Study of Television and Visual Impairment: Prospects for the Accessibility of Interactive Television (2002)

[5] Source: British Population Survey (BPS), 1 August - 20 November 2014. Base: Non-disabled: 15,859, Visually impaired: 319

[6] People with visual impairments and communications services , July 2008, Ofcom (http://stakeholders.ofcom.org.uk/market-data-research/other/tv-research/visual/)

Statutory provisions

The Communications Act 2003

2.11 In considering the issues addressed in this consultation, we must take account of Ofcom's statutory duties, as set out in the Communications Act 2003 ('the Act').

2.12 Ofcom's principal duty, set out in Section 3(1) of the Act, is to further the interests of:

a) citizens in relation to communications matters, and

b) consumers in relevant markets, where appropriate by promoting competition.

2.13 In carrying out its statutory duties, Ofcom is required by Section 3 of the Act to have regard in all cases to a variety of factors, including:

a) the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed; and

b) any other principles appearing to Ofcom to represent best practice.

2.14 In addition, Section 3(2) of the Act requires Ofcom to secure certain things in carrying out its statutory functions, including the availability throughout the United Kingdom of a wide range of television and radio services which (taken as a whole) are both of high quality and calculated to appeal to a variety of tastes and interests.

2.15 In carrying out its duties, Ofcom must also have regard to certain matters listed in Section 3(4) of the Act, as appear to Ofcom to be relevant in the circumstances. These matters include, in particular, the needs of persons with disabilities, of the elderly and of those on low incomes (Section 3(4)(i)).

2.16 In performing its duty to further the interests of consumers, Ofcom is also required to have regard in particular to the interests of those consumers in respect of choice, price, quality of service and value for money.

2.17 Ofcom is also required to:

a) keep the carrying out of its functions under review to ensure that regulation does not involve the imposition of burdens which are unnecessary or the maintenance of burdens which have become unnecessary (Section 6); and

b) take such steps and to enter into such arrangements as appears to it calculated to encourage others to secure that domestic electronic communications apparatus is developed which is capable of being used with ease, and without modification, by the widest possible range of individuals (including those with disabilities); and such apparatus is as widely available as possible for acquisition by those wishing to use it (Section 10).

2.18 Ofcom has also certain duties which specifically relate to the accessibility of EPGs, set out in section 310 of the Act. In particular, these are to draw up, and from time to time review and revise, a code giving guidance as to the practices to be followed in the provision of electronic programme guides (section 310(1)).

2.19 Section 310(2) of the Act provides that the practices to be required by the code must include the incorporation of such features in electronic programme guides as Ofcom consider appropriate for securing that persons with disabilities affecting their sight or hearing or both –

a) are able, so far as practicable, to make use of such guides for all the same purposes as persons without such disabilities; and

b) are informed about, and are able to make use of, whatever assistance for disabled people is provided in relation to the programmes listed or promoted.

Ofcom's Code on Electronic Programme Guides

2.20 Under the Broadcasting Act, Ofcom licenses providers of EPGs that are 'made available for reception by members of the public' and consist of the listing or promotion (or both) of television programmes together with a facility for obtaining access to those programmes (the 'EPG licensees' or 'EPG providers'). EPG licensees are required to ensure that the provisions of Ofcom's EPG Code are observed in the provision of EPGs.

2.21 Ofcom's EPG Code was adopted in 2004 and amended in March 2005[7]. Paragraphs 5 to 13 concern the requirements that EPG providers should meet in relation to assistance to people with hearing and/or visual disabilities.

2.22 Specifically, paragraph 6 of Ofcom's EPG Code sets out general principles with which EPG providers must comply. Amongst these is a requirement, in particular, to make such adjustments to their EPGs as are practicable to secure that they can be used by people with disabilities affecting their sight or hearing for all the same purposes as they are used by other people (paragraph 6(a)).

2.23 Paragraph 7 of the EPG Code says that 'Ofcom expects EPG providers to consult disability groups about the way they meet their obligations under the code'.

2.24 Paragraph 8 of the EPG Code notes that 'much of the functionality of EPGs is dependent upon set top box hardware and software, as well as the data made available by broadcasters', but makes clear that 'Ofcom expects the needs of people with disabilities affecting their sight or hearing to be an integral part of planning for the future development of EPGs'.

2.25 Paragraph 9 of the EPG Code requires EPG providers to produce annual statements of the steps they have taken and plan to take to facilitate the use of their EPGs by disabled people. In Section 3, we discuss the accessibility features that are already incorporated in EPGs, including some with text-to-speech functionality.

2.26 Paragraph 11 of the EPG Code requires that EPG providers ensure that programme information denotes whether access services are provided, using standard acronyms: S (subtitling), SL (sign language) and AD (audio description).

2.27 Paragraph 12 of the EPG Code requires EPG providers to provide information for people with disabilities about assistance in relation to programmes (e.g. how to use the EPG).

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[7] *Code on Electronic Programme* Guides, Ofcom, 2005 (http://stakeholders.ofcom.org.uk/broadcasting/broadcast-codes/epg-code/)

2.28 Paragraph 13 of the EPG Code requires EPG providers to work with broadcasters, platform providers and disability groups to publicise the information and facilities available on EPGs to assist disabled people.

2.29 Paragraph 10 of the EPG Code reminds EPG providers of their obligations under the Disability Discrimination Act 1995, now replaced by the Equality Act 2010, to make reasonable adjustments in the provision of facilities and the delivery of services so as to make these accessible to disabled people.

2.30 What is a reasonable adjustment for a particular service provider to have to take depends on all the circumstances of the case. We consider that technological development is one of the factors which might be taken into account when considering what is reasonable, together with all the other circumstances of the case.

2.31 More guidance is provided in Chapter 7 of the Statutory Code of Practice in relation to Services, Public Functions and Associations, published by the Equality and Human Rights Commission.[8] Interested parties should seek their own legal advice on this.

Impact assessments

2.32 The analysis presented in this consultation document, particularly in Annex 6, represents an impact assessment, as defined in Section 7 of the Act. Specifically, pursuant to Section 7, an impact assessment must set out how, in our opinion, the performance of our general duties (within the meaning of Section 3 of the Act) is secured or furthered by what we propose.

Recent technical and market developments

2.33 Ofcom is required to keep its Code under review. When Ofcom adopted the Code (in 2004), it recognised that there was 'limited scope to reconfigure EPGs so as to facilitate their use by people with disabilities affecting their sight or hearing'[9]. However, in recent years, technical and market developments have resulted in some TV receivers offering features which help people with visual impairments to use them more easily. The table in Figure 1 below sets out Ofcom's current understanding of the accessibility features available with EPGs offered by some of the most popular TV service providers.

[8] *Equality Code of Practice. Services, Public Functions and Associations. Statutory Code of Practice*. Equality and Human Rights Commission, 2011. (http://www.equalityhumanrights.com/sites/default/files/documents/EqualityAct/servicescode.pdf)

[9] Paragraph 8, *Code on Electronic Programme Guides*

Figure 1: accessibility features available in current EPGs

EPG accessibility features in current TV receivers		Speaking EPGs	High contrast displays	Magnification or larger text options	Ability to filter or highlight programmes by access service
TVs	Panasonic	✓	✓	✓	✓
	Samsung	✓	✓	✓	✓
Set top boxes	TVOnics	✓	✓	✓	✓
	YouView	×	✓	✓	×
	Sky	×	✓	×	✓
	Virgin Media	×	✓	×	✓
	Freetime from Freesat	×	×	×	×

2.34 In the light of these developments, and representations from the RNIB, Ofcom began discussions with TV service providers in 2012 about the possibility that they might do more to improve the usability of their EPGs. In particular, we sought to assess the potential for speaking EPGs that could render EPG text as speech, as this appeared to have good potential to help people with visual impairments.

2.35 It became clear from discussions with TV service providers that they did not consider that existing TV receivers using their EPGs could be adapted easily to provide TTS capability. Moreover, they did not wish to commit to including the capability in future TV receivers whose development they controlled or could influence. Several suggested that the TV guide apps that they made available for use on suitable mobile devices (e.g. smartphones and tablets) offered an appropriate level of accessibility for people with visual impairments. Most mobile devices incorporate the ability to render the text in TV guide apps as speech.

2.36 In addition, some EPGs are complemented by TV guide apps that make use of the text to speech capabilities on the third party mobile devices with which they can be used. The CFI sought feedback on Ofcom's provisional view that, though useful to some people with visual impairments, such apps would be impracticable for a significant proportion of others (see in particular, paragraphs A3.14 to A3.27 of Annex 3).

2.37 In April 2014, Ofcom convened a roundtable with blind and visually-impaired people, with the aim of improving our understanding of their experience with using EPGs and other sources of information about TV programmes, and sharing this understanding with TV service providers. The roundtable was also attended by the major EPG providers – Sky, Virgin, YouView, Freesat and Digital UK (which manages the Freeview EPG) – and by groups representing the interests of blind and visually-impaired people – the RNIB, the Macular Society and the Royal Blind / Scottish War Blinded charity.

2.38 The blind and visually-impaired people at the roundtable talked about their experience of using (or not using) EPGs to find out about TV programmes, as well as other means of finding out what was on TV. All found using conventional EPGs either difficult or impossible, but a few used EPGs equipped with text to speech, and those who had not encountered them hoped that they could be become more generally available.

2.39 Ofcom decided to gather more information on the feasibility of implementing text-to-speech capabilities in EPGs, and in July 2014 published a 'call for inputs' (CFI) seeking views on the propositions that:

a) including TTS capability in EPGs might make it much easier for people with visual impairments to use EPGs for more of the same purposes as sighted people;

b) it may now be practicable for providers to incorporate TTS in future versions of their EPGs, though they may not be sufficiently incentivised to do this of their own volition; and

c) ancillary devices and apps for mobile devices that some EPG providers offered are likely to be helpful to some visually-impaired TV viewers, but may be difficult to use and expensive to afford for many visually-impaired viewers, so may not be adequate substitutes for TTS-enabled EPGs.

2.40 We considered all the responses carefully. A detailed summary of them, together with Ofcom's observations, can be found in Annex 3. Individual respondents to the CFI commented mainly on speaking EPGs (the principal focus of the CFI), but also set out their aspirations for a broader range of accessibility features (see, in particular, paragraph A3.12 of Annex 3). Having considered the responses, and other information available to Ofcom, we have decided to propose changes to the Code, with the aim of improving the accessibility and usability of EPGs for people with visual impairments. Our proposals are set out in Section 3.

Section 3

Proposed changes to the Code

Introduction

3.1 Ofcom proposes that EPG providers that provide, or intend to provide, EPGs suitable for multi-functional TV receivers (i.e. those that provide both access to on-demand programming and the facility to record programmes) should use their best endeavours to secure that those TV receivers incorporate accessibility features that enable users to:

a) render text as speech for EPG navigation and the provision of information on channels and programmes included in the EPG, to make it easier for people with limited or no useful vision to use the EPGs. We refer to this as 'text to speech' or 'TTS';

b) highlight or list separately programmes with audio description (and with signing), to make such programmes easier to find;

c) magnify parts of the EPG display, or increase the size of text, to make it easier to read; and

d) switch between the default and 'high contrast' displays[10].

3.2 We explain below the reasons why Ofcom considers that:

a) each of the proposed accessibility features would contribute to helping people with visual impairments, so far as practicable, to make use of EPGs for all the same purposes as persons without such disabilities, in line with section 310(3)(a) of the Act;

b) for the time being, the focus should be on EPGs intended for use in multi-functional TV receivers;

c) licensees should be required to use their 'best endeavours' to secure the incorporation of the accessibility features in the multi-functional TV receivers for which their EPGs are suitable; and

d) in the absence of changes to the Code, it is unlikely that self-regulation would deliver similar benefits.

3.3 Our assessment of the impact of these proposals (available at Annex 6) is broadly qualitative in nature due to the limited availability of quantitative data about the benefits and costs of the proposals. The qualitative analysis investigates the size and nature of the population who could benefit from the proposals and our understanding of the broad nature of the costs that would be imposed (for instance, on EPG operators, manufacturers and the wider general population).

[10] Displays with a contrast ratio of no less than 7:1, as set out in guideline 1.46 of Web Content Accessibility Guidance 2.0. See: http://www.w3.org/TR/WCAG20.

3.4 We welcome any further information about the quantitative or qualitative nature of the benefits and costs of the proposals and as such have included a number of questions in the sub-sections below.

Proposed accessibility features

Text to speech ('TTS')

3.5 For the following reasons, Ofcom considers that TTS in EPGs would help make it easier for blind and visually-impaired people to use them for the same purposes as other people:

a) both blind and visually-impaired people have told Ofcom that they find TTS a very helpful feature. At a roundtable convened by Ofcom in April 2014, blind and visually-impaired people talked about their experience of using (or not using) EPGs to find out about TV programmes, as well as other means of finding out what was on TV. All found using conventional EPGs either difficult or impossible, but a few used TTS-enabled EPGs, and those who had not encountered them hoped that they could be become more generally available;

b) in response to the CFI, several respondents said that they would find speaking EPGs very helpful. Some people with visual impairments told us that they live on their own, and cannot rely upon help from sighted people to navigate the TV (see, for example, paragraph A3.11 of Annex 3);

c) the RNIB, which seeks to assist blind people and promote their interests, believes that TTS would be very helpful. Indeed, it has been seeking for several years to persuade EPG providers and manufacturers of TV receivers to enable TTS for their EPGs. As part of this effort, it has worked with industry partners to develop and demonstrate TTS capability in TV receivers; and

d) research suggests that the difficulty or inability that many visually-impaired viewers find in using EPGs places restrictions on the range of channels that they are able to use[11].

3.6 We consider that the benefits to this group of being able to use EPGs more easily would include increased choice of programming, greater autonomy, greater social inclusion and a wider choice of TV services. Ofcom considers that these benefits are by nature probably non-quantifiable, although the size and nature of the population who would benefit (forecast to be around 2.25 million by 2020, with a large proportion of older people) suggests that they may be considerable.

Q1. Do you agree with the range of potential benefits of TTS for TV viewers with visual impairments described in paragraph 3.5? Do you have any information that would help to quantify the potential benefits?

3.7 We have also considered whether there would be technological barriers that would prevent the incorporation of speaking EPGs in multi-functional TV receivers. In relation to this, we note that:

[11] *People with visual impairments and communications services* , July 2008, Ofcom (http://stakeholders.ofcom.org.uk/market-data-research/other/tv-research/visual/)

a) the ability to render EPG text as speech was made available in set-top boxes sold by TVOnics and Harvard International several years ago, and more recently in televisions made by Panasonic and Samsung. TTS in these televisions now provides access to most EPG functionality and content – for example, it enables menus to be read out, helping visually-impaired users to use TTS as an aid to navigating the EPG; and

b) there was little disagreement on the part of TV service providers responding to the CFI that TTS would be feasible from a technical perspective (paragraph A3.43 of Annex 3).

3.8 Ofcom therefore considers that there are no insuperable technological barriers to providing TTS for EPGs intended for use in multi-functional TV receivers.

3.9 Finally, we also considered whether TV guide apps made available for use with TTS-enabled mobile devices would be adequate substitutes for a TTS-enabled EPG.

3.10 In their responses to the CFI, most TV service providers argued that TV guide apps were a sufficient substitute for TTS-enabled EPGs. By contrast, most individual respondents and advocacy groups argued that, while useful to more tech-savvy people, TV guide apps were less accessible, less useful, less reliable and more costly to consumers than TTS-enabled EPGs. A summary of the points made by respondents on this issue, and Ofcom's observations, can be found in paragraphs A3.14 to A3.27 of Annex 3.

3.11 Having considered responses to the CFI and other information available to it, Ofcom is not persuaded that TTS-enabled TV guide apps are a sufficient substitute for speaking EPGs, as the apps require users to:

a) have a suitable mobile device, which many do not. For example, ownership of smartphones by people with visual impairments is significantly lower than amongst those without disabilities (48% vs 66%)12;

b) pay the costs of such a device and the continuing expense of connection to a broadband network. As three-quarters of visually-impaired people are aged 65 or over, many may be on a restricted income, and may find it difficult to meet these costs; and

c) possess the dexterity and cognitive abilities to use a touch-screen device they cannot see well or at all. Many (though not all) older people experience a decline in these abilities, so would find using a touch-screen device difficult or impossible.

3.12 In addition, Ofcom notes that most TV guide apps:

a) do not offer the full functionality of EPGs. For example, the Freesat app only offers access to the 'now and next' guide, not to the more comprehensive EPG grid; and

b) tend to be less reliable than speaking EPGs, as they depend on the interaction between the host device and the TV receiver, which may be disrupted by periodic changes to operating systems and software beyond the control of the user, as

[12] BPS – see footnote 5

well as by connectivity problems when the processing power of the TV receiver is fully committed, or there are localised problems with wifi.

3.13 Though the information available to Ofcom regarding costs, included that provided by EPG operators and manufacturers, is limited, our understanding is that the costs of adopting TTS in multi-functional devices are unlikely to be very significant, for the reasons explained in more detail in Annex 6.

3.14 **Ofcom therefore proposes that the EPG Code should be amended to require EPG providers to use their best endeavours to secure that TTS-enabled EPGs are incorporated in multi-functional TV receivers.**

Q2. Do you have any information that would help to quantify the additional costs that EPG providers and TV receiver manufacturers would face in providing TTS capability in multi-functional TV receivers?

Q3. Do you agree that the EPG Code should be amended as proposed in Annex 5 to require that EPG providers use their best endeavours to secure that TTS-enabled EPGs are incorporated in multi-functional TV receivers?

Ability to highlight or list separately programmes with audio description

3.15 In recent years, awareness of the availability of programmes with audio description has grown[13]. In response to the CFI, Ofcom was told by some blind and visually-impaired respondents that they only watched programmes with audio description. The choice of audio-described programmes is now better than ever, for three main reasons:

a) more channels than ever are providing audio description – over 80 channels will be required to do so in 2016, up from 79 in 2015;

b) audio description requirements have now risen to the maximum 10% for those channels that have been operating for five years or more; and

c) most of the major broadcasters have undertaken to audio-describe 20% of programmes, while others have done so without a formal commitment[14].

3.16 Even though a number of broadcasters (including Sky, BBC, ITV and Channel 4) provide more audio-described programmes than they are required to by regulation, the majority of programmes broadcast do not include audio description.

3.17 As a result, without the ability to list audio-described programmes separately, finding them can involve looking at the information for individual programmes, a very time-consuming process, even for those with some vision (the majority of those with visual impairments, such as those with macular degeneration).

3.18 Some EPG providers are already providing this accessibility feature. For instance:

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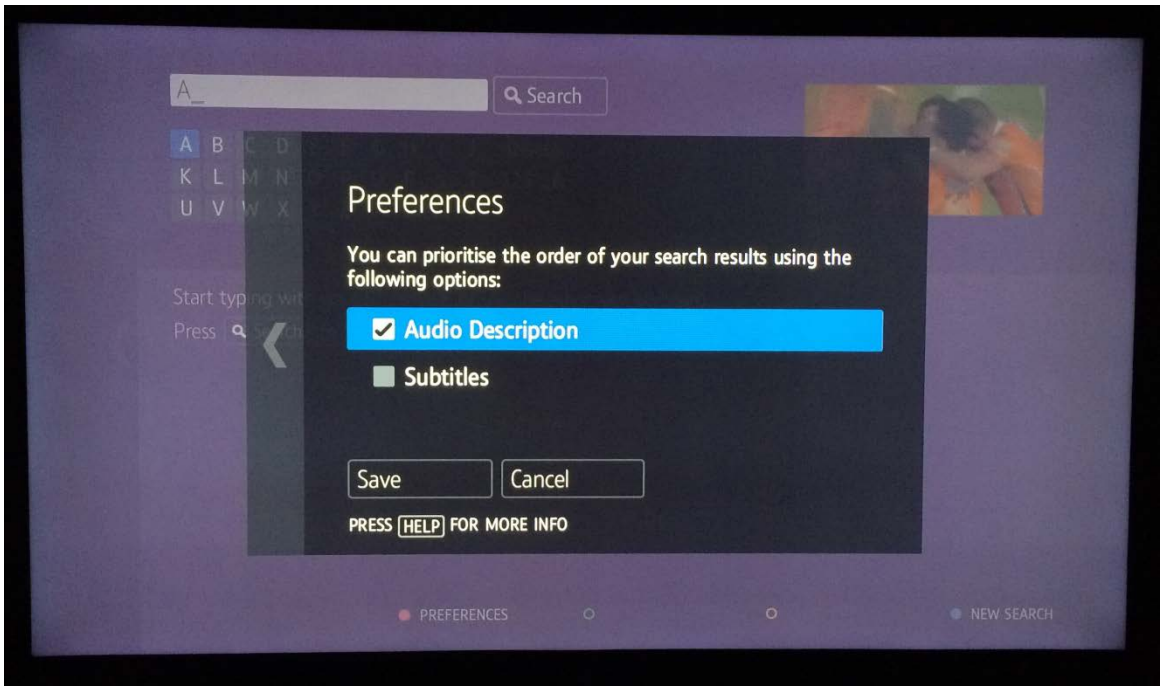
[13] *Research into the awareness of Audio Description*, Ofcom, June 2013 (http://stakeholders.ofcom.org.uk/market-data-research/other/tv-research/audio-description-2013/).

[14] BBC, ITV, Channel 4 and Sky (except on Sky Sports channels) have committed to audio-describing 20% of their content, and in several cases have exceeded this. Other broadcasters such as UKTV and Disney have achieved similar results (http://stakeholders.ofcom.org.uk/binaries/research/tv-research/access-service-reports/Access_Report_2014.pdf).

a) the Sky EPG can be configured to highlight programmes with audio description, and to give an audible 'beep' when a user scrolling through the grid reaches a programme with audio description. Sky also provides a separate listing of programmes with audio description on its website; and

b) the EPG provided in the BT Vision set-top box (which is being phased out in favour of a BT version of a set-top box equipped with the YouView EPG) enables viewers to prioritise searches according to whether programmes are accompanied by audio description (or subtitling) – see Figure 2 below. However, the range of programmes that is displayed is limited by the search string – it does not, for instance, allow users to find out which programmes being broadcast between, say 7pm and 11pm, have audio description.

Figure 2: screen shot of the BT Vision EPG, showing the ability to prioritise programmes with audio description in search results



3.19 Moreover, both methods require the viewer to have usable vision, or assistance from a sighted person. The ability to have the results read out using text to speech would help those visually-impaired viewers for whom high contrast or magnified displays are insufficient. Moreover, many EPGs do not provide visually-impaired viewers with any help to find programmes with audio description.

3.20 Ofcom therefore considers that the scope for users to highlight programmes with audio description would make it easier for blind and visually-impaired people to use EPGs, particularly when coupled with the ability to have these results read out using text to speech. We therefore propose that EPG providers should use their best endeavours to ensure that EPGs made available for use in multi-functional TV receivers provide viewers with the ability to search for programmes with audio description, or to have these highlighted in the grid.

3.21 By the same token, as there are relatively few programmes presented in or interpreted into sign language, Ofcom considers that it would help sign language users to use EPGs to find accessible programming if the EPG also included this

search functionality. Ofcom's initial view is that there would be much less value in subtitling users in being able to search for programmes that are subtitled, as most of the 80 or so channels required to provide subtitling already subtitle 80% or more of their content.

3.22 Ofcom's understanding is that:

a) programmes with audio description can be identified by using the meta tags that accompany programmes, and which indicate (amongst other things) whether a programme is accompanied by audio description, signing or subtitling. Ofcom notes that all the major broadcasters are party to the Digital Production Partnership, which requires that content producers include this information with all new programmes;

b) although in some cases, the ability to highlight or search for content with audio description or signing would require software changes, Ofcom understands that these are unlikely to be particularly complex or expensive, as many devices already include the ability to search for content by reference to characteristics recorded in meta tags, such as programme genre;

c) multi-functional TV receivers are likely to include the necessary processing power for the purposes of searching for or highlighting programmes with audio description or signing. Indeed, Ofcom notes that some multi-functional receivers already include these capabilities, such as set-top boxes offered by Sky and BT (BT Vision only); and

d) the majority of the estimated two million people with visual impairments have some useful vision, so could benefit from these facilities. While the number of sign language users is likely to be much smaller, the incremental cost of adding signing to the list of characteristics which can be searched for, or used to highlight programmes, seems likely to be modest.

3.23 **Ofcom therefore proposes that the EPG Code should be amended to require EPG providers to use their best endeavours to secure that EPGs in multi-functional TV receivers enable users to highlight or list separately programmes with audio description, and with signing.**

Q4. Do you have any information that would help to quantify the additional costs that EPG providers and TV receiver manufacturers would face in providing the ability to highlight or list separately programmes with audio description and signing in multi-functional TV receivers?

Q5. Do you agree that the EPG Code should be amended as proposed in Annex 5 to require that EPG providers use their best endeavours to secure that EPGs in multi-functional TV receivers enable users to highlight or list separately programmes with (a) audio description and (b) signing?

Ability to adjust the display of EPG information so that it can be magnified or the text enlarged ('magnification')

3.24 Many people with sight impairments find it easier to read enlarged text, whether through large print books, regular text with magnifiers, or text on computer monitors that has been enlarged using accessibility settings available in most operating systems.

3.25 The RNIB worked with Harvard International to develop an STB which included the facility to enlarge the display of EPG text. It also worked with the YouView consortium on the design of its EPG, which includes the ability to magnify parts of the EPG to make them easier to read.

3.26 A respondent to the CFI told us that he found this feature extremely useful. Some other respondents said that they would like to be able to enlarge EPG text or magnify portions of the screen.

3.27 Ofcom considers that:

a) the ability to enlarge text or magnify portions of the EPG would help many visually-impaired people to use EPGs more easily; and

b) the YouView EPG shows that it is technically feasible to provide this feature in an EPG designed for use with a multifunctional TV receiver.

3.28 Ofcom's understanding is that:

a) the ability to enlarge text or magnify portions of the EPG would require software changes for those EPGs that do not already provide this facility. As the software to enlarge text and magnify screen-based displays has been widely used in computers for many years, Ofcom's understanding is that this would not be particularly complex or expensive;

b) multi-functional TV receivers are likely to include the necessary processing power for the purposes of enlarging text or magnifying portions of the EPG. Indeed, Ofcom notes that multi-functional receivers using the YouView EPG already offers the possibility to magnify portions of the EPG; and

c) the majority of the estimated two million people with visual impairments have some useful vision, so could benefit from these facilities.

3.29 **Ofcom therefore proposes that the EPG Code should be amended to require EPG providers to use their best endeavours to secure that EPGs in multi-functional TV receivers enable users to adjust the display of EPG information so that it can be magnified or the text enlarged.**

Q6. Do you have any information that would help to quantify the additional costs that EPG providers and TV receiver manufacturers would face in providing the ability to enlarge text or magnify portions of the EPG in multi-functional TV receivers?

Q7. Do you agree that the EPG Code should be amended as proposed in Annex 5 to require that EPG providers use their best endeavours to secure that EPGs in multi-functional TV receivers enable users to adjust the display of EPG information so that it can be magnified or the text enlarged?

High contrast displays

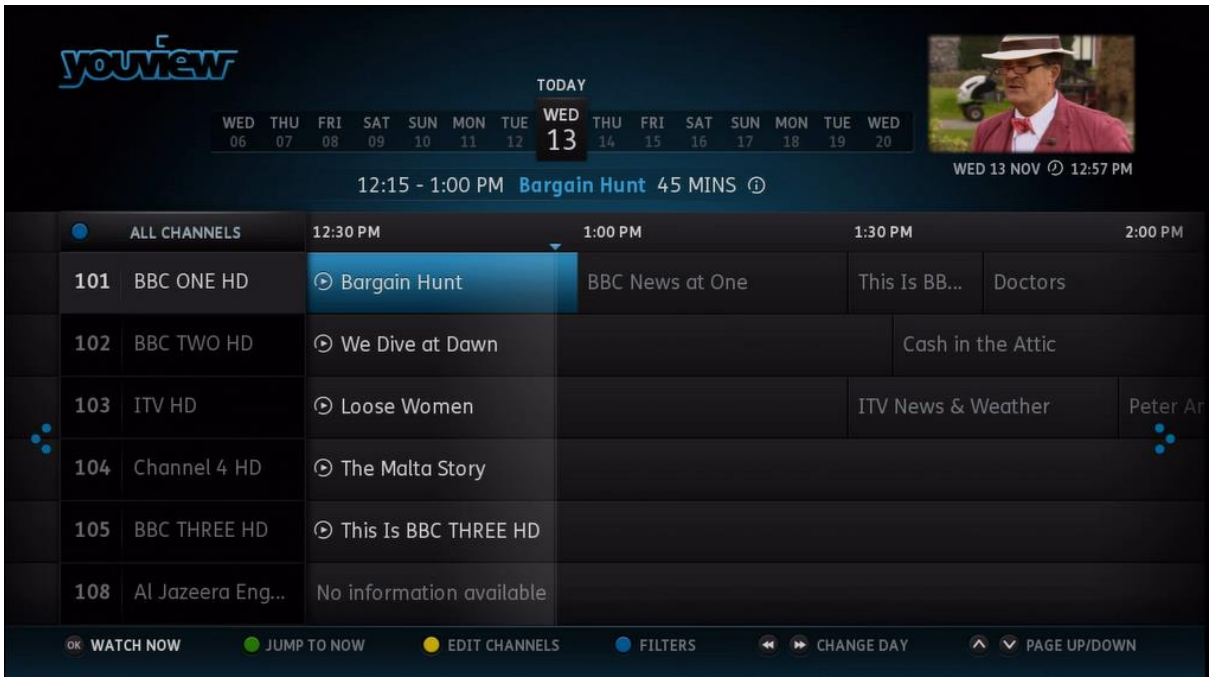
3.30 Some of the most common visual impairments (e.g. age-related macular degeneration and cataracts) reduce the sharpness of vision, to the point where it can become difficult to distinguish text from background. Even people – indeed most people – who do not self-identify as visually impaired are likely to experience a loss

of contrast sensitivity (the ability of the visual system to distinguish between an object and its background) as they age[15]. For this reason, the ability to view EPG displays in high contrast is an important accessibility feature, not just for people with recognised visual impairments, but for older people in general.

3.31 According to Ofcom's EPG Code, Ofcom expects EPG providers to consult disability groups about the way they meet their obligations under the Code (paragraph 7) and to work with disability groups, broadcasters and set top box manufacturers on ways of improving usability (paragraph 8). Ofcom is aware that the RNIB has advised EPG providers on features that people with visual impairments consider helpful, including the provision of high contrast displays.

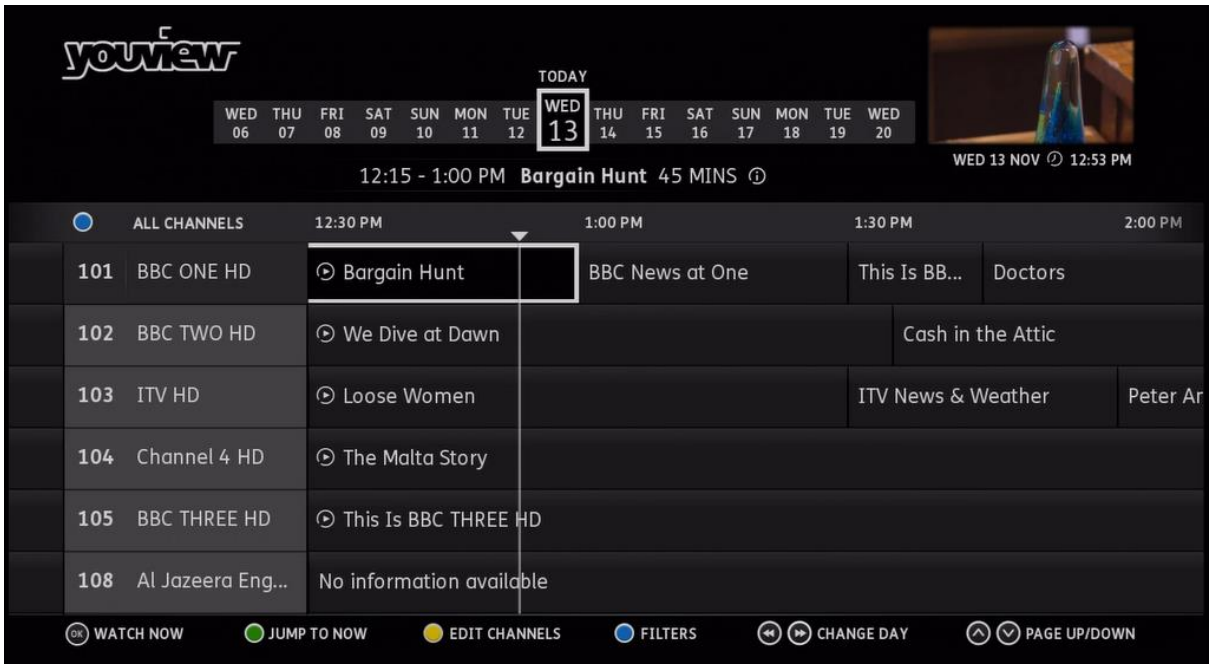
3.32 Ofcom is pleased to note that several EPG providers have recognised the benefits of high contrast displays to people with visual impairments. For example, Sky, Virgin and YouView all provide the option of an alternative display designed explicitly for people with visual impairments. Figures 3 and 4 show screenshots of the YouView EPG in both the standard and high contrast display modes.

Figure 3: YouView's standard EPG display



[15] See, for example Cynthia Owsley's review of research since 1985, *Aging and Vision*, 23 October 2010 (http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3049199/), *Contrast sensitivity and aging*, Vision Sciences Research Corporation (http://www.contrastsensitivity.net/csage2.html) and *Age related changes in visual acuity,* Gittings, NS and Fozard, JL (1986). Experimental Gerontology, 21(4-5), 423-433. (http://www.sciencedirect.com/science/article/pii/0531556586900471)

Figure 4: Youview's high contrast display



3.33 However, this does not mean that EPGs always optimise the display of information to make it easier for people with visual impairments to use them. For example, even the YouView high contrast display, regarded by the RNIB as one of the best available on the market, is not as accessible as it might be. For instance, channel names are displayed in white lettering on a grey background, which some people might find difficult to distinguish. The coloured labels at the bottom of the EPG are ringed in white, which helps them to stand out against the black background. But that does not help people who find it difficult to distinguish colours work out what is the corresponding button they should press on the remote control.

3.34 Against this background, Ofcom invited RNIB to discuss with EPG providers how best to make EPGs accessible to people with visual impairments. The resulting RNIB guidance on best practice, which took account of input from industry, can be seen at Annex 4. Among the points it makes are that:

a) backgrounds where icons or text or images are displayed should be a solid colour. The use of gradients or patterns should be avoided;

b) colour contrast can help distinguish between different options but must not be used as the only indicator, since people with colour blindness may not be able to distinguish them;

c) magnification is useful for those who find standard text sizes too small, but any zoom facility should allow the user to select which areas to magnify, and to retain important information (e.g. horizontal or vertical); and

d) the use of colour contrast in icons can be very helpful to partially-sighted users, but poses difficulties for people with colour blindness. For instance, using a red icon to mark a programme set to record may be recognised by a partially-sighted person but be inaccessible to a colour-blind user unless the shape of the icon also communicates its meaning (a red R rather than a red dot).

3.35 Ofcom welcomes the RNIB's guidance on best practice, which underlines the importance both of high contrast displays and of magnification, as accessibility features that help people with vision impairments, and provides helpful advice to EPG designers. We note that EPG providers are already expected to consult disability groups such as the RNIB about how they meet their obligations under the EPG Code (paragraph 7). We would therefore expect EPG providers to have regard to this guidance. With the exception described below, we do not propose to draw up detailed rules on the issues dealt with in the guidance.

3.36 Ofcom understands that the level of contrast is one of the most important determinants of the legibility of text in EPGs for people with low vision. A standard approach to measuring visual acuity is to describe it as a ratio of what a person with normal vision may see, compared to the perception of a person with low vision. Thus a person with 20/70 vision who is 20 feet from an eye chart sees what a person with unimpaired (or 20/20) vision can see from 70 feet away[16]. A person with relatively low visual acuity will have less contrast sensitivity than someone with normal vision. Increasing the contrast (or luminance) ratio of images can help to compensate for this. So, a person with low vision will require a higher contrast ratio to make text legible, compared to someone with normal vision[17]. For this reason, we consider that it would be helpful to provide EPG designers with an objective measure of the minimum level of contrast that should be provided in high contrast EPG displays.

3.37 For this reason, Ofcom considers that it is important that EPG designers are made aware of the appropriate contrast ratio. Without clarity about what 'high contrast' means, there is a risk that the levels of contrast delivered by EPG providers would fall short of that which is appropriate to meet the needs of people with low vision, and that there would be no regulatory remedy.

3.38 Ofcom therefore asked RNIB for its view of what an appropriate contrast ratio would be for information contained in EPG displays. It suggested a contrast ratio of 7:1, as recommended by Worldwide Web Consortium (W3C) for screen-based text meeting its 'AAA' success criterion. The RNIB considers that this level of tonal contrast would also ensure a reasonable level of colour contrast for the benefit of people with colour blindness.

3.39 W3C is a standards-setting organisation, with a broad global membership, which seeks to enhance the accessibility of web content[18]. It suggests different minimum contrast ratios, depending on the intended users. For example, for a person with 20/40 vision (reported to be the typical visual acuity of people of about 80), the contrast ratio recommended by the W3C is 4.5:1[19]. For people with moderately low

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[16] *Low Vision and Legal Blindness Terms and Descriptions*, VisionAware, American Foundation for the Blind (http://www.visionaware.org/info/your-eye-condition/eye-health/low-vision/low-vision-terms-and-descriptions/1235)

[17] Influences of Contrast Sensitivity on Text Readability in the Context of a Graphical User Interface, (1998),Benjamin A. Parker, Dr. Lauren F. V. Scharff, Stephen F., Austin State University (http://www.laurenscharff.com/research/agecontrast.html)

[18] W3C is a consortium comprising a wide range of members, including academics (including several British universities), telecommunications companies (including BT), government agencies (including HMG), manufacturers of electronic equipment (LG Electronics, Panasonic, Samsung), broadcasters (BBC, NHK, Walt Disney) and advocacy groups (RNIB, Media Access Australia, Vision Australia), amongst others.

[19] http://www.w3.org/TR/UNDERSTANDING-WCAG20/visual-audio-contrast-contrast.html

visual acuity, congenital or acquired colour deficiencies, or the loss of contrast sensitivity that typically accompanies aging, W3C recommends a higher contrast ratio of 7:1 for regular text, and 4.5:1 for larger text.

3.40 Ofcom notes that the 7:1 contrast ratio for regular text has been adopted by a wide variety of professional and governmental bodies. In addition to being recommended by W3C, it has been incorporated into an American National Standards Institute (ANSI) standard, for the purpose of ensuring that that projected images offer sufficient contrast[20], and by the UK Department of Transport and the US Federal Highways Administration in guidance on signage[21]. It is also widely cited in guidance on human factor design and guidance on enhancing web accessibility.

3.41 In the light of these considerations, Ofcom considers that:

a) contrast ratios geared to the needs of people with low contrast sensitivity would make it easier for them to use EPGs;

b) specifying a minimum contrast ratio would provide clarity to EPG providers and TV receiver manufacturers in designing EPGs and the equipment that displays them, and help in ensuring compliance;

c) a standard developed for screen-based displays of web content would also be apt for screen-based displays of EPG content; and

d) while EPG providers may not wish their primary display mode to be built around the needs of visually-impaired viewers, there would scope for them to offer an accessible high contrast alternative, as YouView and Sky have done.

3.42 Ofcom's understanding is that:

a) the software changes needed to deliver high contrast displays are unlikely to be complex or expensive, as many EPG providers already offer this choice. In some cases, adjustments may be needed in EPGs for use in next-generation multi-functional TV receivers to provide a contrast ratio of 7:1, but as this standard has been in existence in the world wide web environment for some years, it seems unlikely that the necessary modifications would be complex or expensive;

b) no significant changes would be required to hardware, as modern TV receivers are capable of displaying content with a wide range of contrast ratios.

3.43 **Ofcom therefore proposes that the EPG Code should be amended to require EPG providers to use their best endeavours to secure that EPGs in multi-functional TV receivers include the option of high contrast displays with a minimum contrast ratio of 7:1.**

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[20] ANSI/INFOCOMM 3M-2011 Projected Image System Contrast Ratio Standard. As an ANSI Accredited Standards Developer Organization (ASD), InfoComm promulgates standards for the audio-visual industries.

[21] Department of Transport Circular 2/93, Street name plates and the numbering of premises, 15 December 1993 (https://www.basingstoke.gov.uk/content/page/27195/Department%20of%20Transport,%20Circular%20Roads%20393.pdf); General guidelines for advanced traveller information system (ATIS) displays, Federal Highway Administration (http://www.fhwa.dot.gov/publications/research/safety/98057/ch03.cfm#contrast)

Q8. Do you have any information that would help to quantify the additional costs that EPG providers and TV receiver manufacturers would face in offering the ability to select a high contrast display of the EPG in multi-functional TV receivers?

Q9. Do you agree that the EPG Code should be amended as proposed in Annex 5 to specify that EPG providers use their best endeavours to secure that EPGs in multi-functional TV receivers enable users to have the option of switching to high contrast displays? Do you agree that a minimum contrast ratio of 7:1 would be appropriate for high contrast displays?

Application of the additional features to the next generation of multi-functional receivers

3.44 Ofcom considers that, at least initially, it would be more practicable and more beneficial for consumers if EPG licensees were required to use their best endeavours to secure improved accessibility in multi-functional TV receivers, rather than the most basic equipment. There are several reasons for this.

3.45 First, Ofcom understands from industry sources that basic Freeview and Freesat TV receivers (e.g. without connectivity or recording capabilities) have very low profit margins (which is one reason why few, if any, are made in the UK). Retail prices vary between £17 and £25[22].

3.46 In its response to the CFI, Digital UK said that "Where margins are thin, which is often the case for standard Freeview set-top boxes, then any additional production cost will drive up the price. For higher-price and premium products, including Freeview TVs, we would hope that such costs are more bearable and can be more readily absorbed. This has been demonstrated in the fact that there are more Freeview TVs carrying TTS functionality than Freeview set top boxes".

3.47 For its part, Freeview said that "The most likely scenario is that TTS technology is built into the higher end models of a manufacturer's range and as a result the price premium passed on to the consumer would be for the latest technology rather than a standalone cost for a speaking EPG".

3.48 Ofcom accepts that it is likely that if manufacturers of basic set-top boxes were encouraged by EPG providers to incorporate the accessibility features proposed, this would be reflected in additional costs that might account for a significant proportion of the retail price, to the disadvantage of less affluent consumers. By contrast, any increase in price for multi-functional TV receivers (which are normally more expensive than basic TV receivers) would be likely to represent a smaller proportion of the total price than would be the case for basic receivers.

3.49 We also note the suggestion from RNIB in its response to the CFI, that Freesat and Freeview could continue to offer basic trademark licences to manufacturers to produce entry-level set-top boxes without the additional accessibility features, while requiring that 'added value' STBs (e.g. Freesat Freetime and Freeview Connect – subsequently renamed Freeview Play) be more accessible.

[22] Prices quoted for SD Freeview and Freesat boxes on websites of Curry's, Argos, Amazon and PC World, 18 June 2015.

3.50 In this connection, Ofcom understands that both Freeview and Freesat have long allowed TV receiver manufacturers to brand EPGs with their basic trademarks provided that they undertake to comply with common technical standards. We consider it unlikely that trademark licences for such basic EPGs would give either licensor sufficient leverage to secure the proposed accessibility features in those TV receivers using them. Most of the cheaper TV receivers would fall into this category, though some more expensive TV receivers also make use of EPGs with basic trademark licences.

3.51 By contrast, Ofcom understands that trademark licences for 'added value' EPGs, such as YouView, Freetime from Freesat and Freeview Play, are likely to give EPG licensees greater leverage over those TV receiver manufacturers that wish to use them. Ofcom notes that specifications for some of the EPGs already include specific accessibility features, notably in the case of the YouView EPG, which provides for magnification and high contrast displays.

3.52 Moreover, based on responses to the CFI from independent experts, as well as responses from TV service providers, Ofcom understands that the next generation of multi-functional TV receivers (and even some current TV receivers) are likely to possess the additional processing power that is capable of delivering TTS. For example:

a) in addition to the points made by Digital UK and Freeview (paragraphs 3.46 and 3.47 above), ✂; and

b) an independent expert[23] said that most pay TV providers already operate on the basis of receiver technologies that have sufficient processing power, memory, storage and other capabilities to support a spoken EPG and/or user interface, and that connected TVs and many personal video recorders (PVRs) would have sufficient basic capabilities to allow them to support a spoken interface.

3.53 Accordingly, Ofcom considers that, initially, the aim should be to secure improved accessibility in multi-functional TV receivers, which are normally more expensive than basic receivers. As a result, the incremental cost of providing the proposed accessibility features would be much lower for multi-functional receivers than for basic receivers. Of course, prices vary over time, and from one product to another, and the relationship between costs and retail prices may also vary by product, as pricing relies in part on commercial judgement. For these reasons, Ofcom does not consider that it would be appropriate to set a specific price threshold.

3.54 Instead, as a proxy for TV receivers that are more sophisticated (and therefore normally more expensive) than basic receivers, Ofcom proposes that EPG licensees should be required to use their best endeavours to enable TTS in TV receivers that are capable both of recording TV programmes, and of providing access to on-demand content.

3.55 Ofcom recognises that many people who are visually impaired have lower incomes than those without impairments. As we explain in Annex 2, a high proportion are older, and may be living on pensions, while those of working age may find it difficult to obtain well-paid jobs. We recognise that not all might be able to afford a multi-functional TV receiver that includes all the accessibility features. It is possible that

[23] Guido Gybels. See paragraph A3.47(d), Annex 3.

pay TV service providers might offer visually-impaired subscribers the opportunity to swap less accessible TV receivers for more accessible versions, but there is no guarantee that this would happen.

3.56 Ofcom accepts that, for the time being, viewers who are unable to afford multi-functional TV receivers may not be able to benefit from all the accessibility features. Over time, we would expect the cost of providing the accessibility features to fall due to economies of scale, and the use of the necessary components in TV receivers to become more widespread. Eventually, we would expect these accessibility features to become common even in basic TV receivers, without the need for large price increases.

3.57 An analogous example is the availability of audio description (AD) - enabled TV receivers. For some years, only expensive or specialist TV receivers were AD-enabled. Now it is a standard feature of most TV receivers, partly because almost all now use the electronic chips needed to make audio description work.

3.58 Ofcom also recognises that in practice the revised Code would mainly apply to set top boxes which are capable both of recording TV programmes, and of providing access to on-demand content, because even the more expensive integrated TV sets rarely offer both of these features. However, we note that two of the major TV manufacturers supplying the UK market, Samsung and Panasonic, already offer these accessibility features in their TV sets.

3.59 **Ofcom therefore proposes that the EPG Code should be amended to require EPG providers to use their best endeavours to secure that the additional accessibility features (i.e., text-to-speech, filtering or highlighting, magnification and high contrast displays) are incorporated in multi-functional TV receivers.**

Q10. Do you agree that, for the time being, the EPG Code should be amended as proposed in Annex 5 to require that EPG providers use their best endeavours to secure that the additional accessibility features (i.e., text-to-speech, filtering or highlighting, magnification and high contrast displays) are incorporated in EPGs for multi-functional TV receivers?

Best endeavours

3.60 Rather than a more prescriptive obligation on EPG licensees to secure the inclusion of particular accessibility features in TV receivers, we propose that the EPG Code should be amended to require EPG licensees to use their 'best endeavours' to secure that the additional accessibility features described above are included in multi-functional TV receivers.

3.61 The reason for proposing this less prescriptive approach is that EPG licensees do not necessarily have total control over all the elements needed to deliver the accessibility features we propose. A licence granted under the Broadcasting Act for the provision of electronic programme guides covers the broadcast of EPG data, but does not cover the software and hardware in TV receivers, both of which are essential to the delivery of the EPG. Nonetheless, EPG licensees do normally have a degree of influence over the specification of many TV receivers which are either provided by EPG licensees to their subscribers or marketed by TV receivers manufacturers which have been granted a trademark licence by EPG licensees. The nature and extent of this influence may vary.

3.62 For example, our understanding is that Sky and Virgin have effective control of the features of set-top boxes made for them by contract manufacturers. By contrast, TalkTalk and BT, which use YouView-based boxes, might have to negotiate with other YouView consortium members (BBC, ITV, Channel 4, Channel 5, Arqiva) to secure agreement on a common specification and the sharing of development costs.

3.63 Freesat and Freeview, which offer trademark licences to manufacturers of multi-functional TV receivers (for Freetime and Freeview Play respectively), each devise core common specifications for those products, and require manufacturers to commit to those specifications. Sometimes these are designed to ensure that customers obtain the same core functionality and a consistent look and feel, whether their STBs are made by Humax, Huawei or Vestel.

3.64 Similarly, our understanding is that the YouView specification is quite detailed, and mandates several accessibility features, some of them of particular benefit to viewers with visual impairments, including high contrast displays and the ability to magnify portions of the screen.

3.65 In principle, the less detailed the core specification, and the more scope given to manufacturers to differentiate their products, the more likely it is that they will take out trademark licences from licensors such as Freeview, Youview or Freesat. This in turn helps the licensors to achieve their primary objective, which is to compete successfully for market share with pay TV operators.

3.66 Ofcom notes that manufacturers of TVs as distinct from set top boxes may only use basic EPG data from Freeview, and so Freeview's ability to influence them may be limited. However, as noted above, Samsung and Panasonic already offer some of the proposed accessibility features in their TV sets, including TTS.

3.67 The reason for proposing that EPG licensees use their best endeavours rather than reasonable endeavours (the approach taken in paragraph 35 of the Code on Television Access Services[24] to encourage broadcasters to work with platform providers to make subtitling and audio description work[25]) is that some EPG licensees have already indicated that they would not voluntarily promote it.

3.68 We consider that the 'best endeavours' approach is also in line with Ofcom's duty under section 10(1)(a) of the Act to 'take such steps, and to enter into such arrangements, as appear to them calculated to encourage others to secure (…) that domestic electronic communications apparatus is developed which is capable of being used with ease, and without modification, by the widest possible range of individuals (including those with disabilities)'.

3.69 In this regard, we consider that requiring EPG providers to use their commercial leverage with manufacturers of TV receivers would encourage them to secure that they develop TV receivers incorporating EPGs that are capable of being used with ease and without modification by people with visual impairments.

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[24] Ofcom, *Ofcom's Code on Television Access Services*, 13 May 2015 (http://stakeholders.ofcom.org.uk/binaries/broadcast/other-codes/tv-access-services-2015.pdf)

[25] A 'reasonable endeavours' obligation placed on broadcasters in the Code on Television Access Services, coupled with equalities legislation, helped to secure co-operation from platform providers in extending access services to cable and satellite platforms within a period of 2-3 years.

Q11. Do you agree that EPG providers should be required to use their best endeavours to secure that specified accessibility features are incorporated in multi-functional TV receivers?

Is regulation required?

3.70 Ofcom notes that it is required to review and revise the EPG Code from time to time, and that the practices required by the Code must include the incorporation of such features in EPGs as Ofcom considers appropriate for securing that people with visual impairments can use EPGs for all the same purposes as other people, so far as practicable. Ofcom's current view, subject to consultation, is that the full suite of proposed accessibility features would be appropriate for this purpose. We are therefore proposing to amend the EPG Code so that it would require EPG providers to adopt the proposed accessibility features in the future.

3.71 We have carefully considered whether self-regulation might further or secure the same objectives. Specifically, we have considered whether the proposed accessibility features are likely to be made available for EPGs in multi-functional TV receivers without regulation.

3.72 In their responses to Ofcom's CFI, none of the TV service providers committed to incorporating text to speech in future EPGs. In a confidential response, one TV service provider said that it was unlikely to prioritise including a feature for partially-sighted customers ahead of a feature that would address the needs of the whole market. Ofcom also notes that the lead time for developing EPGs for multi-functional TV receivers can be a few years, so that a decision by EPG providers not to use their best endeavours to secure the provision of this feature could defer the prospect of a more accessible EPG for visually-impaired viewers for several years.

3.73 For these reasons, Ofcom is not persuaded that, absent regulation, TTS-enabled EPGs would be widely adopted by many of the most popular pay and free-to-air providers of TV services for the foreseeable future. As regards other proposed accessibility features, such as high contrast displays or filtering/highlighting, Ofcom notes that some EPG providers have provided some of these, but none has provided all. It is possible that, over time, these features might be provided in due course. However, there is no guarantee this would be the case.

3.74 Against this background, Ofcom's initial view is that it is unlikely that all the proposed accessibility features would be made available in EPGs for multi-functional TV receivers without the proposed amendments to the EPG Code. Accordingly, Ofcom's current view, subject to consultation, is that the amendments would be appropriate to secure that people with visual impairments are able, so far as practicable, to use EPGs made available for multi-functional receivers.

Q12. Do you agree that, absent regulation, the proposed accessibility features might not be included in all new multi-functional TV receivers whose core specifications are determined by the EPG provider or otherwise agreed between the EPG provider and the manufacturer?

Other proposed changes to the EPG Code

3.75 Ofcom proposes a small number of additional changes to the EPG Code, as follows:

a) paragraph 9 of the EPG Code requires EPG providers to make an annual statement of the steps they have taken to facilitate the use of their EPGs by disabled people. This was intended to act as a prompt to EPG providers to improve accessibility over time. However, Ofcom believes that it would be more effective to substitute the specific requirements proposed above. Ofcom therefore proposes that paragraph 9 of the EPG Code should be deleted;

b) paragraph 11 of the Code requires that the standard acronyms ([S], [SL], and [AD]) should be explained in an appropriate part of the EPG. Ofcom considers that this is no longer required, as the acronyms have been widely used in EPGs and TV listings for over a decade, so their meaning is familiar to potential beneficiaries. Accordingly, we propose to remove this requirement from the Code;

c) paragraph 12 of the EPG Code requires EPG providers to ensure that EPGs indicate which programmes are accompanied by access services using standard acronyms, where practicable. EPG providers have complied with this requirement, and none has suggested that it is not practicable to do so. For this reason, we propose to remove the caveat 'where practicable' in the revised formulation of this rule; and

d) paragraph 13 of the EPG Code requires EPG providers to work with broadcasters, platform providers and disability groups to publicise the information and facilities available on EPGs to assist disabled people. This should include information targeted at publications used by disabled people, and periodic publicity featured prominently on EPGs. The Code already contains a requirement for EPG providers to promote awareness of accessibility features to potential beneficiaries (see paragraph 6C of Annex 5). In the light of the experience, we do not consider that it is necessary for the Code to prescribe how this should be done. For this reason, we propose to delete paragraph 13.

Q13. Do you agree that the EPG Code should be amended as shown in Annex 5?

Annex 1

Responding to this consultation

The issues

A1.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 30 October 2015**. It would be helpful if your response could include direct answers to the questions asked in this document, which are reproduced below. It would also help if you can explain why you hold your views and how Ofcom's proposals would impact on you.

Q1. Do you agree with the range of potential benefits of TTS for TV viewers with visual impairments described in paragraph 3.5? Do you have any information that would help to quantify the potential benefits?

Q2. Do you have any information that would help to quantify the additional costs that EPG providers and TV receiver manufacturers would face in providing TTS capability in multi-functional TV receivers?

Q3. Do you agree that the EPG Code should be amended as proposed in Annex 5 to require that EPG providers use their best endeavours to secure that TTS-enabled EPGs are incorporated in multi-functional TV receivers?

Q4. Do you have any information that would help to quantify the additional costs that EPG providers and TV receiver manufacturers would face in providing the ability to highlight or list separately programmes with audio description and signing in multi-functional TV receivers?

Q5. Do you agree that the EPG Code should be amended as proposed in Annex 5 to require that EPG providers use their best endeavours to secure that EPGs in multi-functional TV receivers enable users to highlight or list separately programmes with (a) audio description and (b) signing?

Q6. Do you have any information that would help to quantify the additional costs that EPG providers and TV receiver manufacturers would face in providing the ability to enlarge text or magnify portions of the EPG in multi-functional TV receivers?

Q7. Do you agree that the EPG Code should be amended as proposed in Annex 5 to require that EPG providers use their best endeavours to secure that EPGs in multi-functional TV receivers enable users to adjust the display of EPG information so that it can be magnified or the text enlarged?

Q8. Do you have any information that would help to quantify the additional costs that EPG providers and TV receiver manufacturers would face in offering the ability to select a high contrast display of the EPG in multi-functional TV receivers?

Q9. Do you agree that the EPG Code should be amended as proposed in Annex 5 to specify that EPG providers use their best endeavours to secure that EPGs in multi-functional TV receivers enable users to have the option of switching to high contrast displays? Do you agree that a minimum contrast ratio of 7:1 would be appropriate for high contrast displays?

Q10 Do you agree that, for the time being, the EPG Code should be amended as proposed in Annex 5 to require that EPG providers use their best endeavours to secure that the additional accessibility features (i.e., text-to-speech, filtering or highlighting, magnification and high contrast displays) are incorporated in EPGs for multi-functional TV receivers?

Q11 Do you agree that EPG providers should be required to use their best endeavours to secure that specified accessibility features are incorporated in multi-functional TV receivers?

Q12. Do you agree that, absent regulation, the proposed accessibility features might not be included in all new multi-functional TV receivers whose core specifications are determined by the EPG provider or otherwise agreed between the EPG provider and the manufacturer?

Q13 Do you agree that the EPG Code should be amended as shown in Annex 5?

A1.2 If you want to discuss the issues and questions raised in this call for inputs, or need advice on the appropriate form of response, please contact Jacopo Genovese at jacopo.genovese@ofcom.org.uk or on 020 7981 3725.

How to respond

A1.3 You may respond to this consultation:

a) by completing our online webform, to which you can find a link on the webpage for this consultation. We strongly prefer this, as it makes it easier to analyse responses, and saves us time;

b) by e-mail, to jacopo.genovese@ofcom.org.uk;

c) by letter to the address below, marked with the title of the consultation.

Jacopo Genovese
5th Floor
Riverside House
2A Southwark Bridge Road
London SE1 9HA

d) by fax to 020 7981 3806, marked for the attention of Jacopo Genovese; or

e) by phone on 020 7981 3725 to Jacopo Genovese.

A1.4 For all responses other than by phone, please use the coversheet we have prepared, as this will speed up our processing of responses, and help to maintain confidentiality where appropriate. The coversheet appears at the bottom of this Annex, and is included in the webform. If you are responding via email, post or fax you can download an electronic copy of the coversheet in Word or RTF format from the 'Consultations' section of our website at www.ofcom.org.uk/consult/.

A1.5 Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your cover sheet only, so that we don't have to edit your response.

A1.6 For larger responses - particularly those with supporting charts, tables or other data - please email jacopo.genovese@ofcom.org.uk attaching your response in Microsoft Word format, together with the coversheet.

A1.7 We do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.

Publication of responses

A1.8 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, www.ofcom.org.uk, ideally on receipt. If you think your response should be kept confidential, can you please specify what part or whether all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

A1.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.

A1.10 Ofcom would prefer to publish responses before the consultation period closes as this helps to make the process more transparent. In particular, it can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. If you do not want your response published until after the consultation has closed, please indicate this on the coversheet.

A1.11 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's approach on intellectual property rights is explained further on its website at http://www.ofcom.org.uk/about/accoun/disclaimer/.

Next steps

A1.12 Following the end of the consultation period, Ofcom intends to consider the responses with a view to deciding whether or not to make the changes proposed. You can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: http://www.ofcom.org.uk/static/subscribe/select_list.htm.

Ofcom's consultation processes

A1.13 Ofcom has published the following seven principles that it will follow for each public written consultation:

Before the consultation

A1.14 Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

During the consultation

A1.15 We will be clear about who we are seeking views from, why, on what questions and for how long.

A1.16 We will make the document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the call for inputs is complicated, we may provide a shortened Plain English Guide for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A1.17 A person within Ofcom will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. Ofcom's 'Consultation Champion' will also be the main person to contact with views on the way we run these processes.

A1.18 If we are not able to follow one of these principles, we will explain why.

After the consultation

A1.19 We think it is important for everyone interested in an issue to see the responses of others to the call for inputs. We would usually publish all the responses we have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

A1.20 Ofcom seeks to ensure that responding to a call for inputs is easy as possible. If you have any comments or suggestions on how Ofcom conducts the process, please call our helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk. We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.

A1.21 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Graham Howell, Secretary to the Corporation, who is Ofcom's consultation champion:

Graham Howell
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA

Tel: 020 7981 3601

Email Graham.Howell@ofcom.org.uk

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing ☐

Whole response ☐

Part of the response ☐

Name/contact details/job title ☐

Organisation ☐

If there is no separate annex, which parts?

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here. ☐

Name

Signed (if hard copy)

Annex 2

People with visual impairments

The number of people with visual impairments is significant, and expected to grow

A2.1 Research undertaken by Access Economics estimated the prevalence of visual impairment in the UK population, by age, gender and ethnicity in 2008.[26] On this basis, it was estimated that 1.8 million people had partial sight or blindness in 2008, of whom 1.13 million (63%) were female and 664,000 (37%) were male. About 218,000 people were estimated to have no sight, of whom 140,000 (64.3%) were female and 78,000 (35.7%) were male.

A2.2 The research found that there are people of all ages with visual impairments, but that the group is skewed heavily towards older people. The research suggests that, of the estimated 1.8 million blind and partially-sighted people in the UK, just under a quarter (418,810) were under 65 years old, and more than three-quarters (1,378,178) were 65 or older. These numbers excludes the many more people who can see reasonably well with prescription lenses.

A2.3 Applying the prevalence rates found by Access Economics to future population projections, the research also estimated how the numbers of people might change over the next few decades. On this basis, the total of those with partial sight and blindness in the UK is expected to grow to 2,262,124 by 2020, and to over 4 million by 2050. Much of this would be driven by the UK's ageing population, leading to an increase in the number of people with age-related macular degeneration and cataracts.

Visual impairment has many causes

A2.4 The five main causes of visual impairment are age-related macular degeneration, cataracts, diabetic retinopathy, glaucoma, and refractive error:

a) age-related macular degeneration (AMD) is an incurable eye disease and a leading cause of blindness in older people. AMD occurs with degeneration of the macula, which is the part of the retina that enables central vision and seeing fine detail. Damage to the macula results in central vision loss. According to the Access Economics research, people with AMD accounted for 16.7% of all those who are blind or partially sighted;

b) cataracts, formed from clumps of protein on the surface of the eye's lens that have the effect of scattering light, can result in clouding of a small area of the lens. Over time, the cataract may grow larger and cloud more of the lens, making it hard to see. They often occur in older people. People with cataracts comprise 13.7% of the blind and partially sighted;

[26] *The economic impact of partial sight and blindness in the UK adult population,* July 2009, Access Economics (http://www.rnib.org.uk/aboutus/Research/reports/otherresearch/Pages/fsluk1.aspx)

c) diabetic retinopathy (DR) is a complication that can arise from diabetes, a group of metabolic diseases in which a person has high blood sugar. DR can result in micro-aneurysms on the tiny blood vessels inside the retina. As the disease progresses, some blood vessels that nourish the retina are blocked, causing vision loss. People with DR account for 3.5% of those who are blind or partially sighted;

d) glaucoma is a group of diseases that can lead to damage to the eye's optic nerve and result in blindness. Glaucoma accounts for 5.3% of those who are blind or partially sighted; and

e) in their more extreme forms, irreversible refractive errors (e.g. short or long sightedness) can result in profound sight-loss (including blindness) which will not be corrected with refraction. People with refractive errors account for 53.5% of those who are blind or partially sighted.

A2.5 Less common conditions such as neuro-ophthalmic disorders (mainly disorders in children), retinitis pigmentosa and other retinal conditions account for the remaining prevalence of partial sight and blindness. These account for 7.4% of those who are blind or partially sighted.

TV is important to blind and visually-impaired people

"I've been completely blind all my life. Contrary to what people might think, blind and partially sighted people do watch a lot of TV and I would certainly put myself in that category…" Male TV viewer

A2.6 A survey commissioned by Ofcom in 2006 found that blind and visually-impaired people watched rather more television than those without sight impairments, perhaps because many are retired or unemployed. At a time when, on average, UK residents were watching around 3.46 hours a day, those with visual impairments were watching 3.8 hours of television a day.[27]

A2.7 For a number of reasons, this is hardly surprising:

a) many will have watched television regularly before their sight was impaired, and will not want to give up a familiar and enjoyable pastime;

b) many will live in a household with sighted people, and will want to share in the same activities;

c) many television programmes have a significant audio component (e.g. news) and can be understood without vision; others are accompanied by audio description, a narrative fitted in within the dialogue, explaining what is happening on screen;

d) people with visual impairments are likely to have more leisure time than those without. Many are of retirement age; others may be unemployed. Older people in particular are likely to have more leisure time than people of working age, but are likely to have less money to spend on leisure activities, and be less able to engage in physically demanding activities; and

[27] *Provision of access services: research study conducted for Ofcom*, Ofcom, March 2006 (http://stakeholders.ofcom.org.uk/binaries/consultations/accessservs/annexes/provision.pdf)

e) television helps people to cope with social isolation, to which older people are prone. A recent survey found that visually-impaired consumers were more likely, than non-disabled consumers, to live alone (25% vs 16%), which may reflect the older age profile[28]. Some older people are effectively housebound for much of the day.

A2.8 People with visual impairments use both pay TV and free-to-air TV services. A recent survey showed that, in 2014, 48% of such people use pay TV services, and 55% use Freeview or Freesat. People categorised as being within the ABC1 demographic group were marginally more likely to use pay TV services than people without visual impairments (57% vs 56%); those in the C2DE group were significantly less likely to have access to pay TV (40% vs 54%)[29].

Despite this, most people who are blind or visually-impaired are likely to find using a conventional EPG difficult or impossible

A2.9 While some people have no useful vision, and therefore cannot use a conventional EPG, there are many with some useful sight. Most people who are blind or visually impaired are categorised as having 'mild' sight loss (63%), but as this cannot be corrected by lenses, even they may not recognise a friend across the road, and will face difficulty seeing buttons on a remote control or seeing the picture on a TV screen. Those with 'moderate' visual impairments (25%) cannot see well enough to recognise a friend across the room, or to read a large print book, while those with severe sight loss (12%) cannot see well enough to recognise a friend close to his or her face. Those with profound sight loss cannot tell by the light where the windows are.

A2.10 However, even those with mild visual impairments would face considerable difficulties in using a conventional EPG. In effect, they must work much harder than viewers without sight impairments to decipher and use on-screen information. Depending on the amount and type of vision they have, they may have to:

a) sit very close to the screen and use magnification to be able to read information in an EPG;

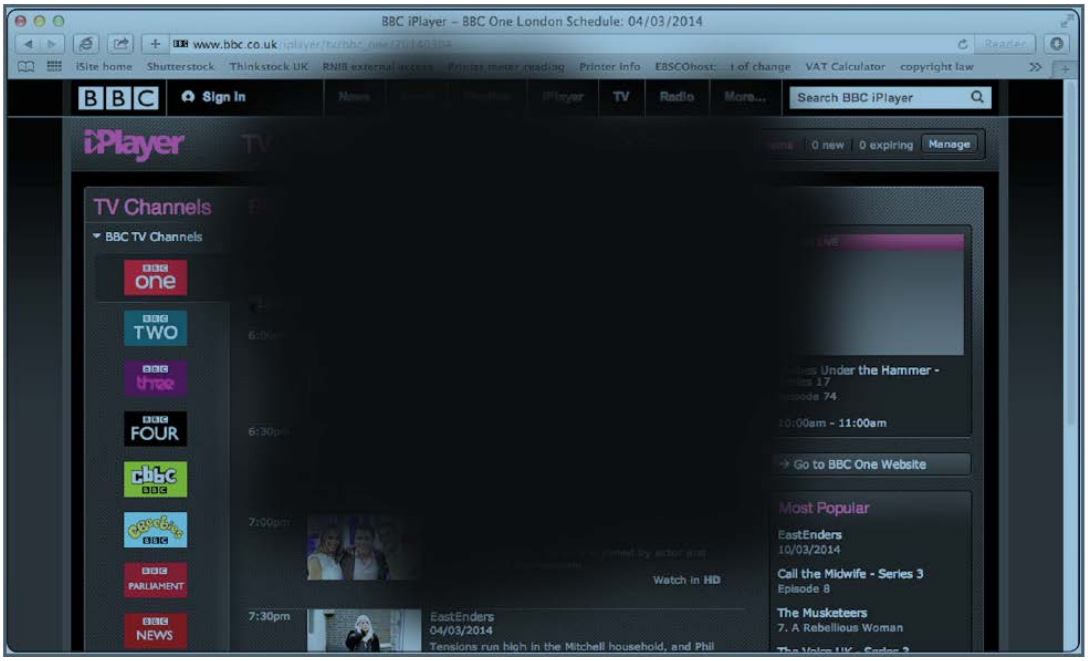
b) spend longer scanning the screen because of their limited field of vision; and

c) concentrate much harder to work out what they need to know, based on the limited amount of information they can glean.

A2.11 One participant in Ofcom's roundtable reported that his peripheral vision meant that he had to scan and rescan the EPG in order to decipher the information it provided. Figure 5 below gives an impression of what someone with peripheral vision might see.

[28] Source: British Population Survey (BPS), 1 August - 20 November 2014. Base: Non-disabled: 15,859, Visually impaired: 319
[29] BPS

Figure 5: How an EPG screen might appear to someone with central vision loss



Source: RNIB, Macular Society

A2.12 Another participant explained that, although she was able with difficulty to see portions of the EPG, she found the whole process too onerous, and instead used her laptop computer to find and view films and TV programmes, even though she would have preferred to be able to watch programmes on a larger TV screen.

A2.13 It is clear that the difficulties encountered by some people with partial sight are enough to discourage some people from attempting to use conventional EPGs. A study in 2002 on how blind and partially-sighted viewers used EPGs found that most participants relied on family or friends to tell them what was on TV, or on their memory of when certain programmes (e.g. soaps) were on TV. Alternatively, they might browse through different channels.[30]

A2.14 However, some blind or visually-impaired people must cope by themselves – research suggests that there are some 123,000 households in the UK including people with severe, mild or moderate sight loss that do not include a sighted adult.[31]

A2.15 The overall result is likely to be that many viewers with visual impairments face a restricted choice of viewing. Indeed, a survey carried out in 2008 found that people with visual impairments who could not see the EPG tended to watch a more limited repertoire of channels than others. They relied heavily on memorising channel

[30] *RNIB AVIO (Access for Visually Impaired and Old) - Review of current Electronic Programme Guides (EPGs) use by target audience*, Rob Porteous, Sensory Design Services, May 2002.
[31] *Study on Access to Smart Meter Benefits for Blind and Partially Sighted Consumers,* SQW in partnership with i2 media research and Astutim, March 2013 (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/175653/access_to_smart_meter_benefits_for_bps_consumers.pdf)

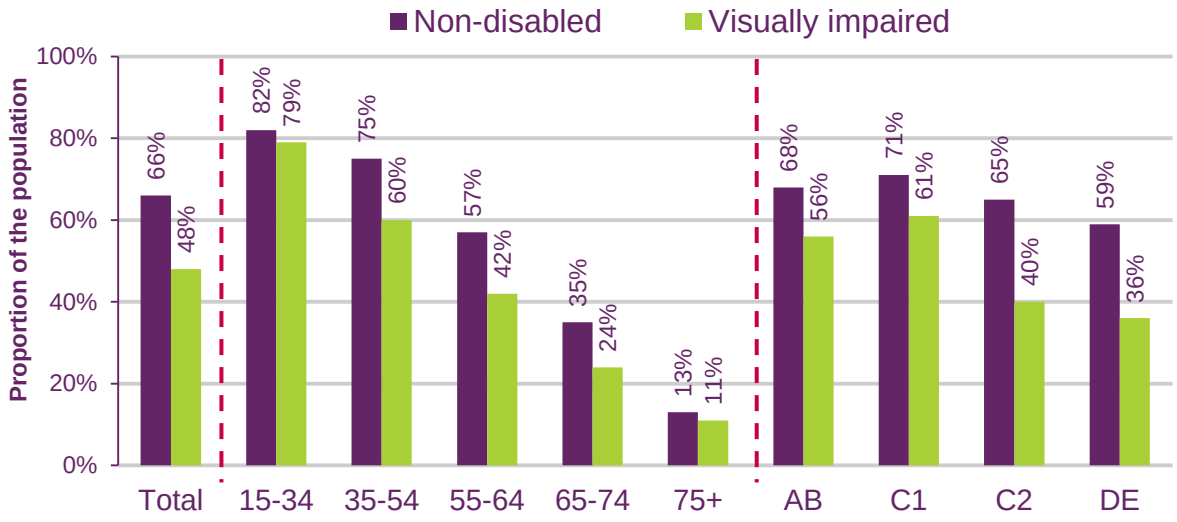
numbers, and had to relearn them when channels were re-ordered.[32] This was echoed in the discussion at Ofcom's roundtable.

Some people can find other ways of substituting for conventional EPGs, but older viewers face additional barriers to coping with sight loss

A2.16 The impact of visual impairment will also vary according to the personal circumstances of each person. Some people who were born with visual impairments or acquire them early on in life, have grown up with the use of assistive devices. As a result, they may be adept at making use of the text to speech facilities offered by computers equipped with screen reading software, and a variety of other devices (including some smartphones).

A2.17 At Ofcom's roundtable, a blind person demonstrated how a smartphone app could be used to find out information about TV programmes, but also how complex and non-intuitive this process might be for most people. However, far fewer blind and partially sighted people own smartphones, as Figure 6 below shows.

Figure 6: Visually-impaired smartphone ownership by age and demographic group[33]



A2.18 Older people, who comprise the large majority of those with visual impairments, can face additional barriers to coping with sight loss:

a) those who have retired and rely upon pensions may be unable to afford devices incorporating assistive technology[34]. For example, ownership of smartphones by people with visual impairments is significantly lower than

[32] *People with visual impairments and communications services* , July 2008, Ofcom (http://stakeholders.ofcom.org.uk/market-data-research/other/tv-research/visual/)
[33] Source: BPS
[34] A recent report suggests that the average pension pot is under £37,000, and that this would generate a retirement income of just £1,340 a year, resulting in a very modest supplement to the state pension. *Help to save – defusing the pensions timebomb,* Policy Exchange, January 2014 (http://www.policyexchange.org.uk/images/publications/help%20to%20save.pdf)

amongst those without disabilities (48% vs 66%)[35]. Significantly more people with visual impairments are categorised as C2DE by comparison with people without visual impairments (54% vs 47%)[36]. Some may be reluctant to risk the expenditure because they are unsure how much it will help;

a) while some remain in full possession of other faculties[37], older people often experience a decline in some of their abilities, including visual and auditory perception, attention span, memory, motor functions and touch, and speech production[38].

A2.19 There are other, less visible, barriers:

a) it is not unusual for people of all generations to take time to confront the reality of permanent sight impairment, and to adopt coping strategies. One younger participant in Ofcom's roundtable explained that it took a long time to come to terms with sight loss; and

b) older people may lack confidence in their ability to master unfamiliar technology, and may even be unwilling to try it out, either because of the risk of nugatory expenditure, or because they do not want to risk failure.

[35] BPS.
[36] BPS.
[37] Research suggests that the impact of conditions and impairments associated with very old age and particular types of disability vary widely among those who experience them. Key factors affecting this include the availability or otherwise of family support, the socio-economic background of the people concerned, and attitudes towards technology. *Consumer research with 'older old' consumers and those living with cognitive, physical and sensory disabilities,* Toynbee Hall, September 2012 (http://www.paymentscouncil.org.uk/files/payments_council/payments_council_-_policis_and_toynbee_hall_older_old_and_disability_report_24.10.12_final.pdf)
[38] *Intellectual development in adulthood*, Schaie, K. W. (1990), in J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging*, 3rd ed., (pp. 291-309). New York: Academic Press. (http://www.uwpsychiatry.org/sls/Intell%20Dev%20in%20Adulthood.pdf)

Annex 3

Summary of responses to calls for input

Introduction

A3.1 In July 2014, Ofcom published a call for inputs, seeking the views of interested parties, in particular of partially sighted viewers and TV service providers, on the benefits of and scope for EPGs that can read out programme information. We summarise below the responses Ofcom received to the specific questions we asked, as well as other comments.

A3.2 Ofcom's call for inputs made clear that comments from any interested parties would be welcome. The questions we asked were divided into two broad groups – those on which we particularly sought the views of people with visual impairments, and those on which Ofcom looked for the views of TV service providers (both subscription and free to air), manufacturers, technology providers and others with relevant expertise.

Respondents

A3.3 Ofcom received over 120 responses from individuals, 80% of which were from people who identified themselves or a relative as blind or partially sighted. We also received responses from various groups representing the interests of blind and partially-sighted people, including the RNIB, the Bristol Disability Equality Forum (BDEF), Insight Gloucestershire (IG), the Macular Society (MS), Mertonvision & Merton Centre for Individual Living, and Sense.

A3.4 In addition, we received responses from TV service providers (BSkyB, BT, Freesat, Freeview, YouView and one other), and equipment manufacturers (Panasonic[39], Portset, LG Electronics, Samsung). In addition, there were responses from Digital UK (DUK) on behalf of its members (the BBC, ITV, Arqiva and Channel 4) and the Digital Television Group (DTG), which includes platform operators, manufacturers and groups representing viewers with sensory impairments[40].

A3.5 Other respondents included Ofcom's Communications Consumer Panel and ACOD (CCP), Media Access Australia (MAA), Pembrokeshire County Council (PCC), and independent industry experts David Holliday (DH) and Guido Gybels (GG).

A3.6 One TV service provider (BT) asked for part of its response to be kept confidential; another asked for the whole of its response to be treated as confidential. Except where respondents requested complete confidentiality, we have posted stakeholders' responses on our website.[41] We summarise the responses below, together with Ofcom's observations.

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[39] Ofcom met Panasonic on 4 August 2014 for a briefing on how the company had implemented text to speech in its TVs.
[40] Ofcom is also a member of the DTG Accessibility Group, but did not participate in framing the Group's response to the call for inputs.
[41] http://stakeholders.ofcom.org.uk/consultations/speaking-tv/?showResponses=true

The viewing experience of partially sighted people

A3.7 In its call for inputs, Ofcom noted that evidence from its roundtable and advice from lobby groups such as RNIB indicated that:

a) television was important to people with visual impairments, in part because audio description had improved the comprehensibility of programmes with a strong visual element; but

b) many partially-sighted people found conventional EPGs (i.e. those without speaking EPGs) difficult or impossible to use, and this prevented them from benefiting fully from the wide range of programming now available.

Responses

A3.8 In response to the CFI, a number of respondents emphasised the value of TV to them, and commented on their experience of watching TV and using EPGs. They ranged from those who were totally blind, to those with some sight, as well as those with partially-sighted friends or relatives.

"I am totally blind and regard access to TV programme information as a very important development. Many people may struggle to understand why television is important or even useable to blind people, but TV is at the heart of everyone's information provision and delivers much of our culture, and is used by all the blind and partially sighted folks I myself know personally." Male, blind

"I am registered Blind and find it impossible to use on screen guides without standing a few inches from the television so a talking TV guide would be a real help to help me stay independent." Female, blind

A3.9 Several said that they particularly valued programmes with audio description – describing it variously as 'very good' and 'wonderful'. One respondent said that he chooses almost exclusively to watch programmes with audio description, as this avoided the need for him to ask what was going on. It made the viewing experience far more satisfactory for both him and the sighted members in the household. Another said that the advent of audio description made the need for programme information even more important.

"I am registered blind; audio description is absolutely wonderful, it makes it possible for me to access significantly more programming than I was able to access before. I wish at this point to be able to access the TV guide, this would be the last remaining obstacle for me to enjoy television". Female, blind

A3.10 Some expressed frustration with their experiences:

a) one said that he had tried several different ways to improve the accessibility of his TV, even purchasing a Sky Talker. However, he was frustrated that this only reads out information on programmes being shown now and next; it did not enable him to access and navigate the EPG. Another said that the voice was unintelligible and too quiet and that he had given up on using it after one day;

b) another said that she could not use either Freeview or Sky, as she could not see information on the content – changes to EPG listings were particularly difficult. In the absence of TTS, blind people had to memorise channel numbers;

c) some were frustrated at the lack of independence for blind TV viewers – one said that his wife needed a system she could use without calling for help every time she wants to watch *Coronation Street*. She loved the audio description on programmes, but could not turn it on or find programmes without a sighted person;

d) some regretted that audio description was not available for on-demand services on some platforms; and

e) a Freesat viewer noted that reception and audio description was good, but he had great difficulty viewing programme names, channel numbers, the EPG and recordings.

A3.11 One respondent pointed to the contribution that speaking EPGs could make to the quality of life of those partially-sighted people who live on their own:

"I think speaking EPGs make TV much more accessible to blind people like myself and better identification of audio descriptive programmes. Being able to read out menus would be extremely useful to us who live alone and cannot rely on others to read these for us." Male, blind

A3.12 Two respondents wanted the ability to magnify portions of the screen or to increase the font of the text in the menus and in the EPG. Another wanted the ability to enlarge all on-screen text, including subtitles

Ofcom's observations

A3.13 Ofcom notes the importance that blind and partially-sighted viewers attach to TV viewing, and the difficulties they face in identifying programmes they may want to watch, which has the effect of diminishing the choices available to them. In framing its consultation, Ofcom has taken into account the aspiration of some individual respondents for a broader range of accessibility features to help people with visual impairments.

Could TV guide apps help to meet the needs of users?

A3.14 Ofcom's call for inputs noted that Freesat, Freeview, Sky, Virgin, and YouView had developed TV guide apps for installation on mobile devices such as smart phones and tablets.[42] While the features of these apps vary, all display programme information in a manner similar to an EPG, and some enable the device on which they are installed to be connected wirelessly to a suitable television receiver and used in much the same way as an EPG.

A3.15 We asked whether respondents agreed with our initial view that TV guide apps on touch-screen devices are helpful to those people with visual impairments who are confident using touch-screen technology, but less helpful to those (particularly older people) who are not, and who may not be able to afford suitable devices. We also asked whether respondents agreed that speaking EPGs integrated into receivers would be easier to use than TV guide apps.

[42] Paragraphs 3.22 to 3.26, CFI.

Responses

A3.16 There was broad agreement by individual respondents, representative bodies and TV service providers that TV guide apps could be useful to those with the requisite knowledge, confidence and equipment. RNIB said that, for these people, a well written and accessible app can make an inaccessible television device accessible. The BDEF said that many younger blind and partially-sighted people find using mobiles and apps 'second nature', because they have learned it at a young age. They are also slightly more likely to be employed and able to afford phone contracts.

"I am a Virgin Media customer and lost my vision 4 years ago. I currently use the TV Anywhere service, which has allowed me to continue using many aspects of my cable TV. Without the app, I struggle to use the service and have to memorise what the buttons on the remote do and where my favourite TV channels are." Male, blind

A3.17 As regards the extent to which TV guide apps might meet the needs of older people with visual impairments, views diverged:

a) several individuals said that, although most older people might find that touch-screen technology did not meet their needs, this was not true of all older people. Well-designed apps could be used by older people, they suggested, provided that adequate training and support was provided, 'not simply a few minutes with an instructor or an on-line video tutorial';

b) TV service providers also thought that TV guide apps had greater potential to help a broad cross-section of partially sighted people, including older people, especially if support was made available (Sky). Sky said that it had observed an enthusiastic take-up of mobile devices amongst partially-sighted people across the age spectrum; others also expected take-up to increase over time (GG, BT, several individuals);

c) a number of respondents (BDEF, BT, several individuals) suggested that cost would be less of a barrier, as more modestly-priced smart phones and second hand devices became available; and

d) several TV service providers said that they either had or would work to improve the accessibility of their TV guide apps (Sky, another TV service provider).

A3.18 Sky agreed that TV guide apps would not suit everybody. It suggested that, for this group of people, 'there is the possibility of exploring initiatives to support and upskill users to use assistive technology on mobile devices'.

A3.19 According to many respondents, including 78 blind and partially-sighted respondents, representative groups (MS, RNIB, Sense), and others (CCP, DTG, GG, PCC), TV guide apps are less likely to be helpful. Various reasons were cited:

a) the RNIB noted Ofcom research showing that only 9% of partially sighted people over 65 owned a smart phone[43]; many other respondents also thought that few older people would own such devices (BDEF, CCP, GG, MS, Sense and several

[43] *Disabled consumers' ownership of communications services*, Ofcom, 25 September 2013 (http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/tce-disabled-13/)

individuals); a few pointed out that they would find it difficult to access consumer advice on which devices were suitable;

b) Sense said that, while some people with dual sensory impairments affecting both their sight and hearing were able to use touch-screen technology, a significant proportion could not, either because of the difficulty of using it, or the cost of affording suitable devices; this was true of the majority of older people with dual sensory impairments. BDEF said that older people were more likely to suffer dual impairments, and would find smartphones of limited value;

c) while smart phones were becoming cheaper, affordability remained an issue for some. Several people on low incomes said that would not be able to justify the cost of a phone contract, particularly if it was only for occasional or emergency use (MS). One younger respondent said that all the money he had went towards rent, food and bills. He said that he could not afford a smartphone without the monetary support of his parents;

d) older people might lack the physical dexterity, cognitive ability and aptitude to navigate the complex user interface (an individual);

e) an individual respondent argued that partially-sighted people face a steep learning curve in getting to grips with touch-screen devices; there was a shortage of suitable training (MC); blind and partially sighted people needed to learn an extended set of touch-screen gestures just to use the accessibility features, and tasks take longer when using the accessibility interface (RNIB);

f) some people were unaware that smartphones could be used to access EPGs (two individuals);

g) an update to a smart phone application could render it inaccessible to those using assistive software (an individual); and

h) neither touch-screen devices, nor TV guide apps were fully accessible using text to speech (GG, an individual); accessible TV guide apps were based on a visual layout which requires blind and partially-sighted people to learn the positions of specific buttons or menus within the app, to know when a menu extends horizontally or vertically across the screen and frequently to learn where a button is unlabelled, or even mislabelled (RNIB).

A3.20 Nor was the converse true – an individual in his 30s said that it was not just older people for whom TV guide apps might not be suitable. He did not want the expense of purchasing a smartphone and to be compelled to use it to interact with his TV; he simply wanted to sit down and watch TV like everyone else, and to have a speaking EPG to choose programmes.

A3.21 One respondent pointed out that, even amongst those who used apps on mobile devices, there remained a demand for speaking EPGs, and that the availability of TV guide apps should not be used as an excuse to avoid providing accessible EPGs on TVs and set-top boxes (GG).

A3.22 But even those who were comfortable using apps recognised that this wasn't true of everyone:

"As a congenitally blind person with the confidence and skills to use a smartphone, I have been accessing tv listings using apps for several years … I am aware of people

who have become blind later in life who do not feel confident using technology. Plus, unlocking a phone, launching an app, finding the channel etc is much less user friendly and less efficient than scrolling through an EPG with a tv remote control." Male, blind

A3.23 Several pointed to the declining cost of mobile devices compatible with TV guide apps (Sky, a pay TV service provider). One (BT) suggested that it might be feasible to design a less complex Android-based mobile device designed to resemble and behave like a conventional remote control, which could voice EPG text if there was a suitable interface with the STB.

A3.24 LG said that the development of mobile applications for TV is still in its infancy, and that implementing normative regulation at this stage would be premature and would stifle innovation.

Ofcom's observations

A3.25 Ofcom accepts that TV guide apps are useful for blind and partially-sighted people who feel confident using touch-screen technology and can afford a suitable mobile device. Until and unless speaking EPGs may become more widely available, they offer a useful supplementary source of information on programming and, in some cases, are capable of being used as remote controls.

A3.26 However, Ofcom's initial view is that TTS-enabled TV guide apps are not a sufficient substitute for speaking EPGs, as the apps:

a) are not available to those who do not have a suitable mobile device, either because they have no need for one (other than to act as a substitute for an accessible EPG) or because they cannot afford either the initial cost or the continuing expense of connection to a telecom or broadband network. Ofcom also notes that, while the cost of such devices may well fall in future, the fact that EPG providers expect blind or partially-sighted customers to bear the initial and continuing costs of the necessary equipment places them at a relative disadvantage to sighted customers;

b) are not of practical use to the large number of people who would have difficulty using the touch-screen devices, for a variety of reasons, including dexterity, complexity, aptitude or reluctance to risk failure. Many, but not all of these, are older people;

c) do not offer blind or partially-sighted users an equivalent experience to that available to sighted users, because they are not:

   i) generally fully accessible, and do not generally offer the same breadth of information and functionality as EPGs for sighted users;

   ii) as reliable as speaking EPGs, since they depend on the interaction between the host device and the TV receiver, which may be disrupted by periodic changes to operating systems and software beyond the control of the user, as well as by connectivity problems when the processing power of the TV receiver is fully committed; and

   iii) as easy to use as speaking EPGs.

A3.27 As regards LG's concerns that regulating mobile apps for TV would be premature, Ofcom notes that it has no powers in this area, and therefore no proposals to regulate the accessibility of apps. However, we do have a duty under section 10 of the Act to encourage the availability of communications apparatus which is easily usable by the widest range of individuals. Ofcom agrees with those respondents who point out that it is good practice for such apps to be designed in accordance with the principles of universal access, and is encouraged that most TV service providers intend to continue to improve the accessibility of their TV guide apps. For example, Sky released an enhanced version of its TV guide app in October 2014[44]. However, this does not enable text to speech to be used when viewing the grid.

Should blind and partially sighted viewers pay more for accessible EPGs?

A3.28 Noting that partially-sighted TV viewers had to pay for secondary devices (such as mobile devices on which apps can be installed) if they wish to access EPG information, Ofcom asked respondents whether they considered that it would be reasonable for partially-sighted viewers to pay more than sighted viewers for the ability to use EPGs or substitutes for the same purposes as sighted viewers.

Responses

A3.29 Almost all individuals and representative groups who responded strongly disagreed that this it would be reasonable for blind and partially sighted viewers to pay more for accessible EPGs. A number suggested that this would be contrary to equalities legislation. A number criticised the £60 charge levied by Sky for its Sky Talker device (Sky has now withdrawn the Sky Talker from sale, explaining that the Sky Talker is only able to vocalise the EPG grid and is not compatible with its HD products).

"TV set-top boxes or Digital TV's themselves should have on board speech.... At no extra cost! If I'm going to pay for a TV/TV service, I want to be able to use it in the exact same way as the next person without forking out for extras." Male, blind

A3.30 RNIB said that blind and partially-sighted people should not have to pay extra for an equivalent service to sighted people, especially when some TV manufacturers had demonstrated that it is possible, practical and economically feasible to make television accessible. It suggested that asking people to pay more might be illegal under equalities legislation. RNIB also pointed out that far more disabled people lacked paid employment than able people, and that blind and partially-sighted people are even more likely to be unemployed than most other disabled people[45].

A3.31 However, not everyone agreed:

a) a few respondents were prepared to pay more for TTS functionality;

b) LG noted that the costs involved with developing and equipping devices with accessibility features are not insignificant. It saw a number of possibilities for

[44] https://corporate.sky.com/media-centre/news-page/2014/skyplus-app-the-new-talking-tv-guide-for-blind-and-partially-sighted-customers

[45] The Labour Force survey (Hewett with Keil, 2014) found 45.9% of long term disabled people with a 'seeing difficulty' were employed compared to 50.5% of other long term disabled people.

recovering these costs, including 'addressing the individual user', consumers generally, and the technology / device provider; and

c) in a confidential response, one TV services provider said that if there are material incremental costs associated with other devices and peripherals, it seemed reasonable for disabled people to pay for these as they do at the moment. It cited the Sky Talker as an example.

A3.32 YouView noted that it provided its TV guide app free of charge, to both sighted and partially sighted viewers.

TV receivers with integrated EPGs

A3.33 Ofcom asked whether respondents agreed with Ofcom's initial assessment that the speaking EPGs integrated into TVs and set-top boxes may be easier for people with visual impairments to use than touch-screen apps.

Responses

A3.34 Most individual respondents agreed with Ofcom's initial assessment. A number said that they already had set-top boxes equipped with speaking EPGs, and were enthusiastic about how easy this made choosing programmes. Some of those without such EPGs regretted that they were missing out because they were unable to find channels on platforms which lacked accessible EPGs.

A3.35 A number who had used both touch-screen devices and receivers with integrated speaking EPGs (TVOnics and Goodmans set top boxes, Panasonic TVs) felt that speaking EPGs offered a number of advantages over TV guide apps on secondary devices:

a) they are much easier to use (MS). By contrast, unlocking a phone, launching an app, finding the channel etc. is much less user-friendly and less efficient than scrolling through an EPG with a TV remote control;

b) integrated speaking EPGs allow quicker navigation and channel switching than TV guide apps;

c) text to speech delivered by the television's own speakers was much easier to hear than TTS-enabled TV guide apps, a significant benefit for people who experienced hearing loss as well as visual impairment;

d) integrated speaking EPGs would avoid the need to rely on systems that might not always work. One Virgin Media subscriber reported that, on occasion, the ability to use Virgin's TV guide app to control his TIVO set top box was unavailable for a variety of technical reasons;

e) those who made heavy use of their phones to keep in touch with family and friends did not want to tie it up by using it as a remote control; and

f) not all TVs were compatible with TV guide apps.

A3.36 The Macular Society said that integrated speaking EPGs could be extremely effective, and for the majority of people with macular, simpler than the use of apps

on mobile technologies, provided that the technology was well-implemented and took account of the views of appropriate user groups.

A3.37 Respondents with macular degeneration (which often results in a restricted field of vision) found speaking EPGs very useful, but regretted that they were not available for all platforms.

"I have lived with AMD for 16 years with the familiar fuzzy overall vision with central loss, reading requires optical, digital or human assistance … I use Freeview and Freesat TV for viewing and recording … The most informative speaking information comes from my Goodmans HDD recorder box which includes current tuning info, adequate EPG info, full talking recording and most navigation instructions." Male, visually impaired

"Over two years ago I purchased the TVONICS DTRZ HD500 Freeview recorder … It not only reads out the EPG but also all the recording and timing functions as well … This is one of the best pieces of talking equipment I have in my home … I would like to have the choice of Sky, BT or Virgin so I can receive a lot more TV channels. As you know this is not possible at the moment so I feel I am missing out on a lot of TV programmes." Male, visually impaired

A3.38 A pay TV service provider said that integrated EPGs would arguably be easier to use, though assistance might still be required during set up.

Ofcom's observations

A3.39 Ofcom:

a) notes that most blind and partially sighted people who responded to the call for inputs wanted speaking EPGs to be integrated into TV receivers, whether set-top boxes or television sets;

b) notes that the reasons advanced for this included relative ease of set up and use;

c) considers that integrating the ability to voice information into the EPGs provided with set top boxes and TV sets would make it significantly easier for most people who are blind or partially sighted to use EPGs than if they had to source, set up and use external devices to find out what is on TV; and

d) considers that speaking EPGs could also help blind and partially sighted viewers cope with changes in channel numbers on EPGs. At present, many have to learn the numbers of channels that they use, and relearn them when changes occur.

Obstacles to speaking EPGs

A3.40 Ofcom's call for inputs summarised the progress that has been made towards overcoming the barriers to adopting text to speech for EPGs. It set out Ofcom's understanding that many of the barriers to the adoption of text to speech for EPGs have now been surmounted. Ofcom invited input from TV service providers (both subscription and free to air), manufacturers, technology providers and others with relevant expertise on any remaining barriers to implementation, and how these might be overcome.

A3.41 With regard to potential obstacles, Ofcom asked:

a) pay TV service providers whether they saw obstacles that would prevent them from committing to including text to speech capabilities in the next planned upgrades to the receivers they offer to subscribers; and

b) trademark licensors such as Freesat, Freeview and YouView, Ofcom asked whether they saw obstacles to using their leverage to require manufacturers to incorporate speaking EPGs in future versions of their branded products, such as Freetime and Freeview Connect.

A3.42 Mindful that cost might be an issue, Ofcom also asked:

a) what are the main types of cost that pay TV service providers would face in incorporating speaking EPG features into the next generation of their set top boxes?

b) if the cost of providing speech-enabled receivers to all those who subscribe to particular pay TV services would entail a substantial delay to the roll-out of such receivers to all subscribers, whether it would it be feasible, quicker and more cost-effective to offer suitable equipment first to viewers with visual impairments?

c) whether, absent regulation, these and other obstacles would make it impossible on commercial grounds to commit to the necessary investment?

Responses

A3.43 As regards the technical practicality of implementing speaking EPGs:

a) individual respondents did not comment in detail. However, there was a widespread view amongst individual respondents that, given the presence of text to speech in many mobile devices, and now in the ATMs of some banks, it ought to be possible for TV service providers to make speaking EPGs available.

b) Portset, a manufacturer of specialist TV receivers for blind and partially sighted people providing speaking EPGs since 2005, said that providing a usable speaking EPG is not difficult – it only required data extraction and then TTS in a user visual and spoken presentation;

c) Samsung and Panasonic noted that they already provided speaking EPGs in many of their television products. Panasonic had taken a progressive approach to extending TTS to EPG menus, focusing initially on programme information, but latterly using TTS to make settings menus more accessible;

d) Sky conceded that 'there is a place for TTS elements to be integrated, and we do not see any fundamental barriers to doing this. For example, converting the EPG grid to speech may be a useful piece of functionality, but for the best experience this should be supplemented by a mobile device';

e) ✂;

f) BT said that if it 'had to do something in the STB, then a cloud based software approach would seem to be the most efficient way of achieving this. However, this assumes that we wouldn't need new chips. Given the performance of modern SoCs [systems on a chip], it should be achievable in software with no need for special hardware. Consequently, there would be a non-recurring

expense which would possibly be manageable, if we utilise cloud plus any per STB licence fee charge';

g) Digital UK agreed 'that the advent of the new Freeview connected proposition is a good opportunity to promote the adoption of TTS or speaking EPGs and [we] will be including TTS, high contrast EPGs, and text zooming within the product guidelines for Freeview Connected' [sic] (though not making them mandatory);

h) Freeview said that 'as Ofcom suggests, there are likely to be fewer barriers to adopting text to speech for EPGs than previously … The most likely scenario is that TTS technology is built into the higher end models of a manufacturer's range and as a result the price premium passed on to the consumer would be for the latest technology rather than a standalone cost for a speaking EPG'; and

i) Freesat said that 'it is very happy to use its leverage with manufacturers to seek to ensure speaking EPGs are incorporated into new TV devices …' but could not compel its manufacturing partners to do so.

A3.44 Nevertheless, most TV service providers cited a number of reasons why integrated speaking EPGs would not be the best solution, whether in terms of the needs of users (including both partially sighted and sighted people), or for technical and commercial reasons.

A3.45 As regards the needs of users:

a) Sky said that providing a TTS-enabled EPG grid as the sole means of access for partially sighted viewers would not help them navigate the on-demand, catch-up, buy-to-keep and third party features available on the Sky platform; a more holistic response was required. Otherwise, if viewers moved from a TTS-enabled portion of the Sky platform to, say, a third party section, this would create a poorer experience for users;

b) Sky said that the processing power and memory of STBs was very limited compared to a smart mobile device, and that it was far easier to design and update apps for such devices. It would not be possible to offer a choice of different voices in a STB; and

c) Freeview and Digital UK said that, given the needs of viewers are so diverse and that the requirements of one segment of consumers may be very different to another, it would seem more sensible for a wide range of products to be available featuring different options for accessibility. One of the reasons the horizontal market works well is because there is a range of products on offer with different features and different price points.

A3.46 Commercial factors were also important to TV service providers:

a) Freeview and Freesat indicated that they could not compel their manufacturing partners to include particular features in TV receivers manufactured under a trademark licence;

b) YouView said that implementing speaking EPGs would pose significant opportunity costs that would fall on YouView and its manufacturing partners. A sound business case would be needed setting out the likely return on investment in terms of device uptake numbers. (✂) made a similar point. It said that

commercial drivers would prioritise features appealing to a broad range of customers, not those appealing to partially sighted customers;

c) YouView and (✂) also said that TTS wouldn't benefit other disability groups, could disrupt other viewers in the room, and would be more expensive for manufacturers, as the functionality would need to be built in to all set top boxes, regardless of whether or not they were used by disabled people;

d) (✂); and

e) (✂)

A3.47 A number of respondents commented on costs:

a) LG noted that the assumption in the call for inputs that the costs of providing a speaking EPG would be low might be valid in some manufacturing circumstances, but not in others. Costs included the cost of providing additional technical features (CPU, memory etc.), but also licensing and other commercial fees. LG said that it would be extremely uneconomic for manufacturers to provide and pay for features that do not have a large consumer uptake;

b) LG said that an equivalent enquiry should be made to the Digital TV manufacturing market; as its circumstances were very different. In default of this, LG provided its own perspective. It pointed out that, as a supplier to the global horizontal market, its revenues were derived from the sales of hardware products, whereas pay TV providers derived revenues from multiple sources. Moreover, it was wrong to assume that all horizontal manufacturers shared a similar view;

c) Samsung noted that, inevitably, there are additional costs associated with the development of, testing and further improvements to any new technology. These costs can extend to both hardware and software elements within the TV; and

d) an independent expert (GG) said that most pay TV providers already operate on the basis of receiver technologies that have sufficient processing power, memory, storage and other capabilities to support a spoken EPG and/or user interface. That said, it was inevitable that additional features in a product almost always require additional effort and additional cost. For high-end Connected TVs, a talking interface (including the EPG) would be more attainable than for low or mid end devices where extra costs can quickly undermine the business case. Connected TVs and many PVRs would have sufficient basic capabilities to allow them to support a spoken interface. A number of products currently on the market demonstrate that spoken interfaces can be offered in competitive, mainstream products. Nevertheless, these tend to be high end products where the additional cost of implementing the spoken interface can be justified and the product sold at an acceptable margin to generate a return on the investment.

A3.48 In general, individual respondents did not comment on the technical and other obstacles that might stand in the way of providing speaking EPGs in next generation receivers. However, there was a widespread view that, given the presence of text to speech in many mobile devices, and now in the ATMs of some banks, it ought to be possible for TV service providers to make speaking EPGs available.

Ofcom's observations

A3.49 Ofcom notes that TV service providers did not in general argue that it would not be feasible from a technical perspective to provide speaking EPGs in next generation receivers. In general, TV service providers consider that it would more proportionate and efficient to address the needs of blind and partially-sighted viewers through TV guide apps.

A3.50 Ofcom understands that the processing power of TV receivers already in the market may make it infeasible for them to deliver TTS, though it notes the comments of an independent expert that this is not true of all such receivers. In any case, Ofcom is proposing that the requirements should apply to new 'high-end' receivers. Ofcom notes that several respondents, including TV service providers, suggested that this would be a more practicable approach than applying the requirements to lower cost TV receivers.

A3.51 Ofcom agrees with Sky's point that if TTS was limited to linear television, it would be less attractive to blind and partially sighted viewers than an EPG offering comprehensive TTS support for all aspects of the service, but doubts that they would view it as offering a poorer experience than no TTS at all. Of course, there might be scope for TV service providers to offer TTS in relation to other aspects of its services.

a) notes that, although the market does provide products with a range of different features and different price points, none of them provide integrated speaking EPGs for pay TV services, such as Sky, Virgin, BT TV and TalkTalk;

b) understands that processing power of some current TV receivers (including STBs) are likely to make it impracticable to support TTS, which is why it has focussed on the prospects for TTS in next generation receivers; and

c) accepts that incorporating new functions in TV receivers would not be cost-free, but believes, having regard to the responses, that the costs are likely to be proportionate in high-end TV receivers.

A3.52 As regards the commercial considerations cited by TV service providers, Ofcom agrees that a requirement to provide TTS-enabled EPGs would impose opportunity costs on TV service providers and their manufacturing partners. Investment in accessibility features for blind and visually-impaired viewers would not, for the most part, make products more attractive to the general public (though households containing both sighted and partially sighted people might well appreciate such products). Absent regulation in this area, it appears unlikely that many would invest in providing speaking EPGs that would be accessible to blind and partially-sighted viewers.

A3.53 As regards the proposition that mandating integrated speaking EPGs would significantly dampen competition and innovation by diverting resources away from addressing broader customer needs, Ofcom considers that the adverse impact is unlikely to be significant, but would welcome evidence on this point. We discuss our understanding of the scale of the impact on TV service providers in the impact assessment at Annex 6.

A3.54 Ofcom notes that Freeview, Freesat and YouView would prefer to leave to the market decisions on whether to incorporate speaking EPGs in products capable of receiving their services.

A3.55 Notwithstanding this, it is clear that, as trademark licensors, all three organisations have a measure of discretion as to which aspects of a specification they can require industry partners to comply with as a condition of being permitted to market branded commercial products. For example, both YouView and Freesat require that their different manufacturing partners produce products with the same user interfaces.

A3.56 DUK's suggestion that people with particular accessibility needs would be best served by different manufacturers creating bespoke solutions for those different market segments is open to question. Bespoke solutions whose costs have to be recouped from a small market segment tend to be expensive, and may not get off the ground at all given the difficulties of demonstrating a return on investment. An example is the early audio description-enabled receivers aimed squarely at people with visual impairments, which were not a commercial success and were withdrawn.

Scope for connected platforms to use cloud-based solutions

A3.57 Ofcom asked what scope there might be for connected platforms to avoid the need for specific TTS provision within consumer equipment by using cloud-based resources (such as speech files on a central server delivered to the device as required).

Responses

A3.58 One blind respondent pointed out that Apple's voice recognition facility ('Siri') sent speech to remote servers for processing, and suggested that cloud services might enable TTS in devices where the hardware itself could not support the necessary processing.

A3.59 As regards cloud-based solutions, Samsung said that there was scope for providing universal voice files for broadcast EPG data, but this might not enable voicing for EPG navigation. To support menu voicing for individual products an internal TTS engine would most likely still be needed. DTG said that a cloud-based approach was an interesting idea worthy of further consideration; if there was general support, a proposal could be submitted to the DVB Project for a programme of work.

A3.60 LG said that cloud-based approaches were very much in their infancy, and that it was too early to evaluate how successful these would be. Like the DTG, it favoured a pan-European approach to taking forward any proposals developed within the UK, as it was no longer economically viable to develop country-specific models. The DTG highlighted a number of practical issues that might need to be addressed, including ensuring receiver sound and matching the quality of speech in a receiver-based TTS menu system. Sky said that it would be a more complex, and ultimately more expensive solution for Sky, which would also be reliant on customers' connectivity.

A3.61 An independent expert (GG) saw little benefits in using cloud-based services for TTS processing, given that the processing and memory requirements for TTS would be modest. He noted that connected TV platforms are generally already well capable of supporting spoken output in terms of processing power, memory and

other capabilities. Moreover, if the connection to the cloud service is unavailable (or indeed the receiver is not connected to the home network, which represents a substantial proportion of all connected TVs in the UK today), the spoken interface would not work.

A3.62 BT said that it did not believe there is a clear answer to this as yet. The implied solution wouldn't be flexible enough if speech files, rather than dynamically updateable streamed text, were used. This is because, as well as the EPG, the system would need to respond to changes in the state of the device e.g. selecting a particular programme, browsing catch-up, on-demand and recorded programming. If a solution is being proposed where all the functionality of a STB is held in the cloud, then trials would be required to establish whether any delays inherent in the network would be acceptable.

A3.63 Representative groups saw drawbacks with cloud-based TTS solutions:

a) cloud-delivered audio could result in a much slower and less responsive system than one incorporated in the user equipment. This could be particularly problematic in those parts of the UK without good internet connection (MS, RNIB);

b) it would not be reasonable for blind and partially sighted people to have to pay for an internet connection if that was the only means of obtaining TTS. In those circumstances, the EPG provider should pay for an internet connection, and the customer should be able to choose their own internet service provider. Where the EPG provider also provided the internet service, it should be responsible for ensuring reliability (RNIB);

c) voice quality could be less intelligible if there was insufficient bandwidth or excessive compression; and

d) initial set up of a cloud-based solution might be more complex than a solution incorporated in the user equipment. In this case, engineer support should be provided within the home, rather than relying on a telephone service. Otherwise, set up would be more burdensome than for sighted customers (RNIB);

A3.64 The Macular Society had concerns that a solution dependent on the quality of internet connections could disadvantage people in rural parts of the UK without broadband that was sufficiently fast or reliable. RNIB felt that, provided these potential barriers were addressed, a cloud-based solution could deliver an equivalent experience in terms of price, complexity, voice quality and latency.

Ofcom's observations

A3.65 Ofcom notes the broad industry consensus that, while there may be scope in future for approaches that enable cloud-based resources to enable the provision of speaking EPGs, the time is not yet ripe for this. We are aware that some TV service providers are already evaluating the scope to make greater use of cloud-based resources (for example, to support programme-search functions). But exploitation of this capability is likely to be constrained for the time being by the fact that many TVs are not yet connected to the Internet. Accordingly, Ofcom does not consider that a TTS solution that relies upon connection to external resources would be fit for purpose at present.

Annex 4

RNIB Guidance on the Accessibility of Electronic Programme Guides for partially sighted people

This paper provides general advice on designing an Electronic Programme Guide that is accessible to partially sighted people. Different TV interfaces will have different accessibility challenges to overcome so specific advice should be sought for any particular EPG interface.

Much of the information here is not just useful and helpful to partially sighted people but will also help anyone who is print disabled such as people with dyslexia, attention deficit disorders or learning difficulties.

Text

The choice of font as well as the weight and use of effects such as italics and underlines needs to be considered. Too light a font (in terms of thickness) will be hard to read as will too small a font.

- Use a clear font for text (avoid handwriting or novelty fonts)
- Italics or underlines should be used sparingly
- Use a combination of upper and lower case text. Many people recognise words from the shape so block capitals can be harder to read.
- Use as large a text as possible for the programme titles while ensuring the EPG spans a reasonable number of channels over a reasonable timeframe. There must also be a small distance between the letters and the grid lines.
- Use fonts with solid colours (avoid gradient or 3D effects)

Contrast

The choice of colours used in the interface greatly affects whether elements of the interface can be seen or not. There are two types of contrast, tonal contrast and colour contrast. Tonal contrast refers to the difference between light and dark. This is the most important form of contrast for differentiating between foreground and background. Colour contrast refers to the contrast between different colours. Red and green have very high colour contrast but may have poor tonal contrast. Colour contrast is a useful way of differentiating between different options but must not be used as the only indicator since people with colour blindness may not be able to differentiate these options.

- Use good tonal contrast between programme title and background.
- Ensure that it is obvious which items are highlighted/in focus while retaining good contrast
- Use good colour contrast for programme title, background and highlighted areas of text, but do not use colour alone to provide useful information

Backgrounds

Backgrounds should be one solid colour. If a dark coloured text is placed on a lighter background picture then the contrast has to be considered from the view of the dark text to the darkest part of the background (and vice versa for light text on a dark background picture). Using a colour gradient or a picture also increases visual clutter which can affect users with dyslexia or other disorders affecting reading. Using bright white as a background can be 'glaring' for some users and can also make it hard for dyslexic users to read text.

- Backgrounds where icons or text or images are displayed should be a solid colour. Avoid using gradients or patterns.
- Avoid using images for backgrounds
- Avoid pure or bright white.

Icons and non-textual information

Similar rules apply to the use of icons as do for text. The use of colour contrast in icons can be very helpful to partially sighted users. This must not be the only way of imparting a piece of information however as it will not be usable by colour blind users. For instance using a red icon to show a program is set to record will easily be seen and understood by a partially sighted person but will be inaccessible to a colour blind user unless the shape of the icon also communicates its meaning (a red R rather than a red dot). If an icon may be used on a light or dark background then giving it a contrasting outline will help it stand out. Colour is a good way of denoting information such as the availability of audio description and whether the program is shown in HD but too many colours or too many symbols and icons can make the interface feel cluttered. It is important to remember non-textual information such as gridlines in an EPG or the clock-line (which indicates the current time on the horizontal axis) needs to be visible to a partially sighted audience although obviously the most important information has priority.

- Do not use gradient coloured icons, use solid colours for icons
- Colour should not be the only way of denoting important information (such that a programme is set to record, has a reminder or has an Audio Description track)
- Colour is a good way of denoting options such as AD, shown in HD, subtitles etc, but beware of the issue of visual clutter with too many colours or too many symbols and icons
- If an icon might be used on a light or dark background consider adding a contrasting outline or border
- Consider the accessibility of everything in the interface that imparts information whilst prioritising the accessibility of the most important information

Magnification

Sometimes users will need a larger font than is practical in a standard interface so manufacturers should consider a zoom or magnification. Zoom enlarges a portion of the screen so a mechanism needs to be available to select which portion of the screen the user wants to view. When using magnification or zoom it's important to bear in mind all of the parts of the interface that add context. An EPG is a good example of this since the user

needs to see the horizontal axis to know the timing of the program and the vertical axis to know which channel it's on. Other magnification options may enlarge the element in focus while still keeping some, most, or all of the other elements on the screen.

- Magnification is useful to users for whom standard text sizes are still too small
- Any Zoom needs a mechanism for the user to select which portion of the screen they want magnified (the zoom area) and a mechanism to move focus to elements in the interface
- Having the zoom area follow the focus can simplify the user interaction but some non-focusable areas of an interface convey important information (such as program synopses) these must also be accessible
- An interface can have more than one method of zoom or magnification to account for interaction styles on different pages of the interface
- When magnifying, care must be taken not to lose contextual information (such as the vertical and horizontal axis in the EPG).

This paper contains guidance to be considered when designing an EPG, however as it relates to visual aspects it is difficult to suggest its exact application. Advice should be sought for any specific EPG.

For more information please contact RNIB: businesslink@rnib.org.uk

Annex 5

Code of practice on electronic programme guides

[Only those parts of the code relevant to this consultation are reproduced. Proposed insertions are underlined; proposed deletions are scored through]

Introduction

1 This Code sets out the practices to be followed by EPG providers[46]:

a. ...
b. to provide the features and information needed to enable EPGs to be used by people with disabilities affecting their sight or hearing or both; and
c. …

Assistance to people with hearing and / or visual disabilities

5 Section 310(3) *[of the Communications Act 2003]* requires that Ofcom's EPG code obliges EPG providers to incorporate such features in their EPGs as are appropriate to enable, so far as practicable, people with disabilities affecting their sight or hearing to use the EPGs for the same purposes as people without such disabilities. EPGs are also to provide information about assistance in relation to programmes (e.g. how to navigate radio and television listings, and how to operate television access services such as subtitling, signing and audio description), as well as facilities for making use of that assistance. This section sets out the requirements that EPG providers should meet in order to comply with the Code.

~~General principles~~ Features to be included in EPGs

6 [*This paragraph corresponds to sub-paragraph 6.a of the current Code.*] EPG providers are required to make such adjustments to their EPGs as are practicable to secure that they can be used by people with disabilities affecting their sight or hearing for all the same purposes as they are used by other people.~~; and~~

6A *[Sub-paragraph 6.b of the current Code would be moved to paragraph 6C below; this paragraph would replace similar provisions in paragraph 11 of the current Code.]* In particular, all EPG providers should ensure that programme information indicates whether programmes are accompanied by access services, using the following acronyms: [S] for subtitling, [AD] for audio description, and [SL] for sign language. A corresponding provision has been included in the Code on Television Access Services requiring broadcasters to make such information available to EPG providers.

[46] The term 'EPG provider' means any organisation providing an electronic programme guide as defined by section 310 of the Communications Act under a Broadcasting Act licence.

6B [*New paragraph.*] In addition, EPG providers that provide or intend to provide EPGs suitable for multi-functional TV receivers[47] should use their best endeavours to secure that those TV receivers incorporate the options for users to:

a) render text needed for EPG navigation and the provision of information on channels and programmes included in the EPG as speech;

b) highlight or list separately programmes with audio description, and with signing;

c) adjust the display of EPG information so that it can magnified, or the text enlarged; and

d) select a 'high contrast' display[48].

Promoting awareness of relevant assistance

6C [*The initial part of this paragraph corresponds, with some changes, to sub-paragraph 6.b of the current Code.*] EPG providers are required to promote awareness of the scope of EPGs to provide ~~information about programmes with access services, in conjunction with broadcasters and representatives of people with disabilities affecting their sight or hearing~~ relevant assistance to people with disabilities affecting their sight or hearing, including:

a. [*new sub-paragraph*] how EPG users can find information about programmes with access services~~,~~.;
b. *[sub-paragraphs 6C(b) to (d) correspond to sub-paragraphs 12(b)-(d) of the current Code]* how to use the access services accompanying the programmes;
c. what options exist for customising the appearance of the EPG to make it easier to use; and
d. what additional sources of help and information are available in other places (e.g. on websites, or from telephone / textphone helplines), whether from the EPG operator, or television service providers.

7 [*The initial part of this paragraph corresponds to paragraph 7 of the current Code.*] Ofcom expects EPG providers to consult disability groups about the way they meet their obligations under the code~~, which are set out below~~. *[The following provision corresponds to paragraph 10 of the current Code]* EPG providers will need to have regard to their obligations under ~~the Disability Discrimination Act 1995~~ equalities legislation to make reasonable adjustments in the provision of facilities and the delivery of services so as to make these accessible to disabled people, and should seek their own advice on this. *[The following provision corresponds to the last part of paragraph 8 of the current Code]* In this connection, Ofcom expects EPG providers to work with disability groups, broadcasters and ~~set top box~~ manufacturers of TV receivers on ways of improving usability.

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[47] For the purpose of the Code, a 'multifunctional TV receiver is one that provides both access to on-demand programming and the facility to record programmes.
[48] A display with a contrast ratio of no less than 7:1.

Adjustments to EPGs to facilitate their use by disabled people

8 [*Paragraph 8 of the current Code would be omitted, with the exception of its last provision, which would be retained by inserting it at the end of paragraph 7. See also proposed additional requirements under paragraph 6B above*] At present, there is limited scope to reconfigure EPGs so as to facilitate their use by people with disabilities affecting their sight or hearing. In particular, much of the functionality of EPGs is dependent upon set top box hardware and software, as well as the data made available by broadcasters. However, Ofcom expects the needs of people with disabilities affecting their sight or hearing to be an integral part of planning for the future development of EPGs. To this end, Ofcom expects EPG providers to work with disability groups, broadcasters and set top box manufacturers on ways of improving usability.

9 [*Paragraph 9 of the current Code would be omitted*] EPG providers are required to produce by 30 November 2004, and thereafter annually a statement of the steps they have taken and plan to take to facilitate the use of their EPGs by disabled people. Ofcom will assess the adequacy of these statements in the light of the particular circumstances of each EPG.

10 [*Paragraph 10 of the current Code would be retained by inserting it in paragraph 7 above, updating the reference to equalities legislation.*] EPG providers will need to have regard to their obligations under the Disability Discrimination Act 1995 to make reasonable adjustments in the provision of facilities and the delivery of services so as to make these accessible to disabled people, and should seek their own advice on this.

Provision of information

11 [*Paragraph 11 of the current Code would be retained, with some changes, and inserted into paragraph 6A above.*] EPG providers will be required to ensure that information included in relation to television programmes indicates which programmes are accompanied by television access services. Where applicable, the programme synopsis in the EPG should indicate which programmes are accompanied by television access services, using the following upper-case letters - subtitling (S), signing (SL) and audio description (AD). Where practicable, these abbreviations should be explained in an appropriate part of the EPG. If non-standard terms are used in any part of the EPG, and removal or replacement by the standard abbreviations would require software or hardware updates, this should be done at the next reasonable opportunity. A corresponding provision has been included in the Code on Television Access Services requiring broadcasters to make such information available to EPG providers. Where practicable, programme information in the EPG should indicate by means of standard abbreviations the nature of the access service provided, in accordance with guidance to be devised by Ofcom in consultation with disability groups, broadcasters and manufacturers of digital receiver equipment.

12 [*Paragraph 12 of the current Code would be retained, with some changes, and inserted into paragraph 6C above.*] EPG providers should provide on an easily accessible part of their EPGs (where practicable) or alternatively in other accessible ways (e.g. on websites or interactive services) information for people with disabilities on:

a. how to use the EPG;

b. how to use the access services accompanying the programmes;

c. what options exist for customising the appearance of the EPG to make it easier to use; and

d. what additional sources of help and information are available in other places (e.g. on websites, or from telephone / textphone helplines), whether from the EPG operator, or television service providers.

Promotion of awareness

13 [*Paragraph 13 of the current Code would be omitted.*] EPG providers are required to work with broadcasters, platform providers and disability groups to publicise the information and facilities available on EPGs to assist disabled people. This should include information targeted at publications used by disabled people, and periodic publicity featured prominently on EPGs.

Annex 6

Impact assessment

Introduction

A6.1 This Annex, together with the broader assessment of our policy options set out in the remainder of this consultation document, constitutes an impact assessment for the purposes of section 7 of the Communications Act 2003 (the 'Act'). Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. Specifically, pursuant to Section 7, an impact assessment must set out how, in our opinion, the performance of our general duties (within the meaning of Section 3 of the Act) is secured or furthered by what we propose.

A6.2 Below, we discuss three options: first, the option to 'do nothing' (i.e. have no changes to the accessibility requirements); second, the option to require the introduction of various visibility features and text to speech; and third the option just to introduce the visibility features (no text to speech). Before outlining these options, we discuss the practical matters which arise when assessing the levels of benefits and costs to stakeholders in these scenarios.

Assessing the impact on stakeholders

A6.3 As explained in Section 2, Ofcom has a duty to draw up, and from time to time review and revise, a code giving guidance as to the practices to be followed in the provision of electronic programme guides (the 'EPG Code'). The practices required by the EPG Code must include the incorporation of such features in EPGs as Ofcom considers appropriate for securing that persons with disabilities affecting their sight are able, so far as practicable, to make use of such guides for all the same purposes as persons without such disabilities (section 310(3)(a) of the Act).

A6.4 In assessing which accessibility features should be incorporated, we consider the impact on stakeholders of the introduction of any additional feature and weigh up whether we think that the likely benefits associated with such features will outweigh the likely costs. However we recognise that forecasting the likely future costs and benefits of any policy change can be difficult.

Approach to assessing benefits

A6.5 Quantifying the benefits of the proposed accessibility features for people with visual impairments is challenging.

A6.6 We know that television is important to people with visual impairments. As we explain in Annex 2 (paragraphs A2.6 to A2.8), they watch nearly 4 hours of television a day on average, and many subscribe to pay TV services. We also know that they can find using an EPG to select programmes to watch difficult or impossible, so may miss out on the chance to benefit from the wide choice of programming available to all TV viewers. And we know that many EPG providers have already invested in accessibility features for people with visual impairments, suggesting that they recognise the benefits to visually-impaired viewers of doing so.

A6.7 But it is difficult to put a price on the value of being able to find and watch a programme that a viewer might otherwise have missed, absent relevant accessibility features. For that reason, the approach we have taken is to describe the difficulties faced by blind and visually impaired viewers, and the nature of the benefits to them that the proposed accessibility features might provide. In other words, we use a broad qualitative approach to the likely benefits.

Approach to assessing costs

A6.8 In July 2014, Ofcom issued a Call for Inputs ('CFI') which asked about the feasibility of speaking EPGs. Mindful that no stakeholder had experience of implementing all the proposed accessibility features, we asked the following questions:

a) '*Do licensors such as Freesat and Freeview see obstacles to using their leverage to require manufacturers to incorporate speaking EPGs in future versions of products authorised to use their brands, such as Freetime and Freeview Connect?*' (Q8);

b) '*What are the main types of costs that pay TV service providers would face in incorporating speaking EPGs features into the next generation of their set top boxes?*' (Q9)

A6.9 Stakeholders' responses helped us with this analysis. Few of the responses contained any detailed cost information. We believe that there may be a number of reasons for this. First, it may be difficult to assess the costs of a feature that is not currently purchased and where the amounts for future purchase are also uncertain. Second, the extent to which TV receivers may already include some of the necessary hardware (e.g. processors that can support TTS, as well as other commercial features) and software (e.g. that can interrogate software to allow users to search programme metadata) will vary from one product to another, making incremental costs difficult to assess. We also consider that the main problem may lie in the difficulties of cost attribution. In other words, the accessibility features are probably a subset of features in a package of software and hardware, and distinguishing the costs of one feature from the others may be very difficult.

A6.10 In the absence of concrete quantitative data, the approach we have adopted is to look at the various cost categories identified through the CFI, and to assess the likely scale of incremental costs for each feature on the basis of available indicators (e.g. the extent to which accessibility features have already been included in EPGs).

A6.11 Whilst our approach to the impact assessment does not include specific cost estimates, our current view is that the overall costs of requiring the implementation of the visibility and text to speech features would be unlikely to be disproportionate relative to the likely extent of the benefits. Nonetheless, we would welcome any relevant data that respondents may have. To this end, the main document invites respondents to provide any information that would help to quantify the additional costs that EPG providers and TV receiver manufacturers would face in providing the proposed accessibility features in EPGs for multi-functional TV receivers.

Option 1: No changes to accessibility requirements (the 'do nothing' option)

A6.12 We first consider why the status quo would be unlikely to ensure that persons with disabilities affecting their sight are able, so far as practicable, to make use of EPGs in the same way as those without such disabilities.

A6.13 The EPG operators currently provide a variety of solutions for the visually impaired (see Figure 1 in Section 2). However, none of the features (aside from high contrast displays) appear to be standard, so there is limited choice and availability of these different features.

A6.14 Feedback suggests that each of these accessibility features is helpful to some people with visual impairments. For example, high contrast displays can help those whose vision is blurred or affected by a loss of contrast sensitivity. The same people may also benefit from the ability to have information displayed in larger text. Text to speech (TTS) can benefit both those who have some useful vision, and those who have none. For example, we were told by people with restricted fields of vision that they can see portions of the EPG, but that some programme searches can be very time-consuming. TTS can make the process of finding programmes much quicker and less demanding.

A6.15 Some EPG operators have provided TV guide apps that can be used on touch screen/mobile devices equipped with TTS (and some people with visual impairments have reported that these can be useful). However, we note that using TV guide apps to find out about TV programmes and channels requires both the ownership of and the facility to use a touch screen device.

A6.16 Research suggests that people with visual impairments are less likely to own a mobile device. Whereas 66% of adults without a disability own a smartphone, only 48% of those with a visual impairment do so. Adults over 65 account for three quarters of people with visual impairments, and are much less likely to own a smartphone if they are aged 65-74 (26% of this age group) or 75+ (11% of this age group).

A6.17 Further, some older visually impaired people may find suitable touch screen devices difficult to use. This may be because they find it hard to see buttons on the screen. But older people are also more likely to suffer from loss of manual dexterity, growing cognitive impairment and unwillingness to contend with 'new' technology. In Q2 2013, 19% of all adults 75+ (with and without visual impairment) found using television difficult (against 5% of the total population), and 39% of the same category reported having difficulties using mobiles (vs 8% total population)[49].

A6.18 Our current view is that each of the accessibility features would be beneficial to some of the visually impaired and that lack of provision is reducing their programming and platform choice relative to those without such disabilities. Further, we consider that TV guide apps are not a feasible solution for many of the visually impaired, and therefore that text to speech should be incorporated into the EPG

[49] *Disabled consumers' ownership of communications services*, Ofcom, 25 September 2013 (http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/tce-disabled-13/)

itself rather than the visually impaired being required to own a mobile device and potentially overcome difficulties in their use[50].

A6.19 We also consider that it would be feasible for the EPG operators to provide all the accessibility features we outline in our document i.e. the technology is now available to roll out these features. Further, that it is unlikely that, without regulation in this area, the EPG operators would provide the range of accessibility features we have outlined.

Option 2: improved accessibility features (as proposed in Ofcom's consultation)

A6.20 Ofcom is proposing that electronic programme guide ('EPG') licensees which provide, or intend to provide, EPGs suitable for multi-functional TV receivers (both TV sets and set top boxes) should use their 'best endeavours' to ensure that those TV receivers include the following accessibility features:

a) separate listing or highlighting of programmes with audio description and programmes with signing;

b) the option to display EPG information in high contrast format;

c) the option to increase text size or magnify portions of the screen; and

d) the option to have EPG text read out, using text to speech (TTS) technology.

A6.21 For this purpose, multi-functional TV receivers (both televisions and set top boxes - STBs) means those which:

a) can record programmes shown on the television set; and

b) enable the use of catch up services.

A6.22 The proposed definition would exclude basic TV receivers which do not have these capabilities.

Potential impact on stakeholders

A6.23 We now consider how our proposals may affect different stakeholder groups, including:

a) people with visual impairments and other reading difficulties;

b) other viewers;

c) EPG providers;

d) TV receiver manufacturers;

e) suppliers of software / hardware to the manufacturers.

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[50] *Disabled consumers' ownership of communications services*, Ofcom, 25 September 2013 (http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/tce-disabled-13/)

People with visual impairments and other reading difficulties

Multichannel television and the visually impaired

A6.24 There have been significant changes to UK television in recent years and viewing by the general population has become more fragmented.

A6.25 Depending on the TV service they choose, EPGs now allow people to choose programming from several hundred TV channels. EPGs differ by platform in their design and in the allocation of EPG numbers to different channels. There are also frequent changes to EPGs (to account for channel launches, moves etc.).

A6.26 However, whilst the general population has more choice and flexibility, those who are older and visually impaired probably find it more difficult to navigate this new television environment.

A6.27 Amongst the general population, over three quarters of those aged 50+ report using EPG menus as their primary means of navigation[51]. By contrast, many visually-impaired people will find it difficult or impossible to see and read the EPG. They will have to listen to the television to ascertain the channel they are on and remember channel numbers. A survey carried out in 2008 found that people with visual impairments who could not see the EPG tended to watch a more limited repertoire of channels than others (see paragraph A2.15 of Annex 2). They relied heavily on memorising channel numbers, and had to relearn them when channels were re-ordered.[52] The larger number of channels and more frequent changes to channel listings will have made this more difficult.

A6.28 People with visual impairments related to ageing may also have other medical problems related to their age. For instance, difficulties with their hearing, attention span, memory, motor functions and touch. So for an older visually impaired person, these factors may make remembering channel numbers and general navigation through an EPG even more difficult.

A6.29 These factors mean that people with visual impairments are likely to find EPGs without appropriate accessibility features difficult to use.

A6.30 In addition, both the RNIB and Dyslexia Action argue that TTS can help people with reading difficulties[53]. Dyslexia Action points out that TTS can help people increase their comprehension by adding an additional channel of information.

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[51] YouGov for the BBC, 442 adults 18+ with Sky+ HD, 23-25 February 2011; qtd. in: Technologia, i2media research, *The value and optimal management of channel position and prominence on electronic programme guides*, 4 July 2012 (http://webarchive.nationalarchives.gov.uk/20120913095731/http://dcmscommsreview.readandcomment.com/wp-content/uploads/2012/07/The_value_and_optimal_management_of_channel_position_and_prominence_on_electronic_programme_guides.pdf).

[52] *People with visual impairments and communications services*, July 2008, Ofcom (http://stakeholders.ofcom.org.uk/market-data-research/other/tv-research/visual/).

[53] See paragraph 2 of RNIB's guidance at Annex 4, and advice to dyslexics from Dyslexia Action (http://www.dyslexiaaction.org.uk/news/tech-thursday-make-your-computer-speak-part-1-getting-started).

Benefits of accessibility features to people with visual impairments

A6.31 People with visual impairments watch about the same amount of television as other people: it is a source of information and entertainment, of shared experience with other household members, and of companionship for those living isolated lives.

A6.32 Feedback to Ofcom[54] suggests that EPGs with better accessibility features and speaking EPGs would provide several benefits to this group:

a) an increased choice of programming. EPG features to help viewers identify and select audio-described programmes would make it easier for people with visual impairments to enjoy a greater choice of a television programmes, including those with audio description. This is now available on around 70 channels, which are required to audio describe up to 10% of their programming. Many of the most popular channels voluntarily describe 20% or more of their content[55]. Some respondents to the CFI told Ofcom how much they value audio description (see paragraph A3.9 in Annex 3). However, most EPGs offer no easy way for visually-impaired people to find these programmes;

b) greater autonomy, whether living with others or by themselves. Feedback to Ofcom's CFI suggests that visually-impaired viewers would like the autonomy to choose programmes themselves, and are reluctant to continuously rely on help from partners and other household members. Respondents who have TVs with speaking EPGs value the independence they provide; and

c) greater social inclusion, as the visually impaired can find and watch programmes that friends, family, workmates and acquaintances are talking about.

A6.33 Ofcom also notes that if the proposed accessibility features were made available in the EPGs for different platforms, this could make it easier for people to benefit from platform switching. For example, one respondent to the CFI noted that she couldn't use either Freeview or Sky, as she couldn't see information on the content. If all TV services (cable, satellite and DTT) offered accessible EPGs, this would allow people with visual impairments to benefit from a choice between different platform line-ups, features and premium content.

A6.34 Significantly, the Australian government recognised the value of speaking EPGs by including STBs with text to speech in those offered to beneficiaries of a scheme analogous to the UK's Digital Help Scheme for vulnerable consumers[56].

The size and nature of the population who could benefit

A6.35 The benefits outlined above are non-quantifiable (for instance, higher social inclusion). However, it may be possible to get an indication of their extent by considering the size and nature of the population who would benefit.

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[54] From the roundtable we held in April 2014, the call for inputs it published in July 2014, from RNIB and from individual blind users.

[55] Ofcom, *Television Access Services Report 2014*, 9 April 2015 (http://stakeholders.ofcom.org.uk/market-data-research/market-data/tv-sector-data/tv-access-services-reports/tv-access-services-2014)

[56] http://www.oceanbluesoftware.com/news/105-ocean-blues-talking-tv-software-benefits-thousands-in-austrailia-as-part-of-government-help-box-scheme

A6.36 Around two million people in the UK have poor or no vision, and this number is expected to reach over 2.25 million by 2020 and over 4 million by 2050[57]. This growth is linked to the ageing population. Whilst there are many causes of visual impairment, which can result variously in loss of central or peripheral vision, clouded or blurred vision, and no vision at all, many are related to ageing. This also means that whilst people of all ages have visual impairments, more than three quarters are 65 or older.

A6.37 Older people are more likely to have other physical impairments and so more likely to be housebound. Improvements to their television service are likely to increase their social inclusion and reduce loneliness.

A6.38 Therefore it is likely that a significant number of people, many of whom would be older, would benefit from speaking/more accessible EPGs.

Timescale of the benefits

A6.39 Over time as the UK population ages, and the population with visual impairments increases, the potential benefits of more accessible EPGs/speaking EPGs are likely to increase. However, other factors will also influence the timing and extent of the benefits.

A6.40 First, our proposals would only affect a subset of TV receivers (i.e. 'multi-functional TV receivers'). However, we consider it likely that these would account for a substantial proportion of new STBs/TVs[58]. Further, we also think it likely that the provision of extra functions within advanced TV receivers would, in the medium to longer run, result in the market 'tipping' such that they become standard features (commoditised) in all boxes/TVs. In other words, if a substantial proportion of manufacturers of more advanced TV receivers (and their suppliers of chips, hardware, software etc.) develop and include the ability to use accessibility features via their equipment, then it may be cheaper, and so become standard practice, to supply them in all boxes/TVs (as economies of scale kick in). At this point the features would therefore become de-facto available across all box types.

A6.41 Second, our proposals will only affect new TV receivers, not those already sold or on the market. Roll-out of the new features will therefore also depend on the life cycles of each TV receiver, which probably vary. Thus, a TV service provider that has just launched new TV receivers without accessibility features might not develop a next generation receiver for a few years. Further, while we understand that some EPG licensees normally have a high degree of control over the specification of TV receivers that they provide to their subscribers (e.g. Sky and Virgin), we recognise that others which are members of a consortium may need more time to negotiate with other consortium partners and manufacturing partners before committing to new accessibility features.

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[57] *The economic impact of partial sight and blindness in the UK adult population, July 2009, Access Economics,* p. 45 (http://www.rnib.org.uk/sites/default/files/FSUK_Report.pdf)

[58] In 2013, pay TV households represented around 53% of all digital TV households (CMR 2014). The STBs in these households will not be replaced immediately the policy is implemented, but will be changed to those which enable greater accessibility as the companies update their equipment or as customers require new services (not available on their current STBs). Another indication of the potential market for high end receivers is reflected in the uptake of Smart TVs – in the first quarter of 2014, these televisions represented 45% of all purchases of all TV sales.

A6.42 Finally, even when next generation multi-functional TV receivers become available, the level and timing of the benefits will also depend on the rate at which visually impaired people replace their existing TV receivers. This may not be very fast – initially many members of this group may be unclear about the benefits offered and reluctant to replace a set-top-box/television which is still working (especially if they have limited incomes). Uptake will increase as costs, and so prices, fall with economies to scale, and as current equipment wears out.

A6.43 Therefore it may well be some years before the full benefits of the policy begin to be felt: particularly where less affluent people are concerned. However, without a Code change, it is unlikely that these features would be provided voluntarily by each EPG provider.

A6.44 Overall Ofcom's initial view, subject to consultation, is that there are likely to be considerable (non-quantifiable) future benefits to the visually impaired if greater accessibility features were required within EPGs. However, we would welcome the views of stakeholders and any evidence they are able to provide regarding the nature of the population who will benefit, levels and timing of benefits.

Other viewers

A6.45 Viewers without visual impairments (with the possible exception of those with dyslexia) are unlikely to benefit directly from the provision of extra accessibility features and speaking EPGs on multi-functional TV receivers.

A6.46 They might also face higher prices for these types of TV receivers as the cost of introducing these features is likely to be recovered across all such new devices. However, our understanding is that the extent of any potential price rise is likely to be limited. The increased costs are likely to be relatively small (see discussion on EPG operators and TV receiver manufacturers below) and will be spread across a large number of TV receivers. These economies of scale, which would increase if the features become standardised across TV receivers, are likely to further limit increases in cost and hence prices. We would welcome any further information that stakeholders may have on the extent of potential increases in cost and prices.

A6.47 Some EPG providers have argued that if they introduce speaking EPGs, other software developments, which would benefit the population as a whole, might not occur. They argued that the non-visually impaired may therefore face higher prices and a lower quality service than the counterfactual scenario (in which Ofcom did not require the development of speaking EPGs). However, we doubt that our proposals would prevent any significant improvements in quality. We consider that the software development costs for speaking EPGs are likely to be modest. We also consider that investments and innovation which would benefit a manufacturer's position and profits are likely to continue to occur, as they would be justified on their own merits. However, we welcome any further information from stakeholders regarding any future effects on investment and innovation.

EPG providers

A6.48 EPG providers interact with end consumers in the UK in three main ways:

a) free-to-air TV service providers (Freeview, YouView and Freesat) do not provide TV receivers for sale to end users, but normally license some manufacturers to

use their trademarks (including their logos). The manufacturers then sell to end users via retailers;

b) pay TV operators such as Virgin, Sky, BT and TalkTalk supply set top boxes ('STBs') as part of their service to end users. We understand that these operators usually pay manufacturers to make the set-top-boxes (though Sky also manufactures a proportion itself, having bought Amstrad a few years ago) and recover these costs from subscribers (often over a period of time via a monthly subscription charge); and

c) free-to-air and pay TV service providers have developed TV guide apps for touch screen/mobile devices that enable all users of their TV services to plan viewing and, in some cases, to remotely programme their PVRs to record programmes. Most such apps have been designed or modified to work with the TTS capabilities of mobile devices.

A6.49 TV guide apps enable EPG providers to externalise some of the costs of providing text to speech (the mobile device manufacturer provides the functionality, and the end consumer purchases the device). Even if EPGs become more accessible, operators will probably continue to maintain and develop these apps, as they are intended to benefit all users (and any investment costs are probably sunk).

Freeview, Freesat and YouView

A6.50 Freeview, YouView, and Freesat require STBs/TV manufacturers, as licensees of their trademarks/intellectual property, to comply with certain technical standards[59].

A6.51 Freesat has said that it does not have the power to require manufacturers to supply speaking EPGs. We consider that this may well be the case in respect of basic STBs[60], for which the core specification is very limited[61]. However, the core specifications for multi-functional TV receivers are much more detailed – for example, the first generation specification for YouView receivers ran to 229 pages.

A6.52 In principle, the less detailed the core specification, and the more scope given to manufacturers to differentiate their products, the more likely it is that they will take out trademark licences. This in turn helps the licensors to achieve their primary objective, which is to compete successfully for market share with pay TV operators. Although the licensors may not have an incentive to include enhanced accessibility features in the core specifications, this does not necessarily mean that they cannot do so. For instance, we note that YouView receivers already include high contrast displays and the ability to magnify parts of the EPG display.

[59] See, for example, the Freeview requirements (http://www.freeview.co.uk/wp-content/uploads/2013/08/Freeview-Manufacturers-Licence-July-2013.pdf)

[60] The basic boxes have an 'open licensing' system i.e. limited requirements for manufacturers who want Freeview/Freesat branding for their basic boxes. This system allowed the 'Free to air' platforms to encourage the manufacture of cheaper boxes, so encouraging end users to migrate to Free to Air (for instance, during digital switch over).

[61] When the specification was launched several years ago, the priority for Freeview consortium members was to encourage production by a wide range of manufacturers. They considered that this would facilitate competition, driving prices down and stimulating innovation, so increasing Freeview's market share.

A6.53 Our proposed policy would require these EPG providers to use their best endeavours to secure that future multi-functional TV receivers include accessibility features for the visually-impaired. We consider that this would require them to negotiate and change their licence specifications with a subset of their manufacturing partners. We think that any extra administration, legal and compliance costs faced by these EPG operators are unlikely to be significant but welcome any further information on the extent of such costs.

Pay TV operators (Sky, Virgin, TalkTalk, BT and EE)

A6.54 As noted above, Pay TV operators supply end customers with STBs directly as part of their service. The operators themselves source the STBs from manufacturers. As such they will have contractual agreements with these manufacturers, which should include detailed technical requirements for the boxes to be supplied.

A6.55 Ofcom's proposed policy would require the Pay TV operators to use their 'best endeavours' to ensure that the STBs supplied to them include the various accessibility features (magnification, text to speech etc). As such, we consider that these operators may face a number of extra costs.

A6.56 First, they will have to change their contracts with their suppliers. This will involve some negotiation, legal and administration costs. We currently consider that these costs are likely to be one-off in nature and probably relatively immaterial.

A6.57 Second, as direct suppliers to end users, they will probably face extra ongoing costs. These could include both the costs of higher numbers of engineer visits to end users' homes (to help them install and learn to use the new accessibility facilities), as well as increased call centre costs (to support end users over the phone should they have any difficulties with these features). Both types of costs are likely to be driven by the volume of sight impaired customers.

A6.58 Where call centre support is concerned, we believe that Sky and Virgin already have dedicated accessibility call centres, though this may not be the case for the other pay TV operators. These other pay TV providers may therefore have to introduce such call centre services or engage and train staff to deal with these specific types of caller. In all cases, the pay TV operators would have to train and brief staff in the required guidance to offer in relation to the new accessibility features and/or arrange calls by engineers. However, call volumes are likely to be modest – as they are likely to be driven by a subset of a subset of customers (customers who are visually-impaired, who have difficulty dealing with the accessibility features, and who don't have sighted household members / relatives / friends to help). Easily accessible online advice might reduce the volume of calls and demand for engineer visits.

A6.59 Whether or not the extra costs of engineer visits or extra costs of call centre support are material to a particular pay TV operator, probably depends on the current levels of service they provide to sight impaired customers. It will also depend whether they charge the sight impaired customers for these support services (this will shift the costs to those customers). Our current view is that any extra costs related to these functions are unlikely to be material, as pay TV operators are already likely to have engineers and call centre functions that can be adapted to deal with these new requirements.

A6.60 Finally, pay TV operators may also face higher prices for the STBs from manufacturers (due to the costs of developing and installing these features in their boxes). This could lead to reduced profits and/or increased prices to end users. However, we doubt any such cost increases would be significant (see below in the sub-section on STB/TV manufacturers).

A6.61 We would welcome any further information from stakeholders on the nature and estimated costs of incorporating the EPG accessibility features which would be faced by the Pay TV EPG operators.

TV receiver manufacturers

A6.62 There are good grounds for believing that it would be feasible for manufacturers of TV receivers to include the proposed accessibility features in multi-functional receivers. Two television manufacturers (Panasonic and Samsung) already produce televisions which include speaking EPGs. STBs equipped with text to speech were manufactured on behalf of TVOnics and Goodmans, though they have ceased production. The table in Figure 1 of Section 2 includes examples of which of the other visual impairment accessibility features are already included in STBs/TVs.

A6.63 However, for those multi-functional receivers which do not currently have the ability to provide these accessibility features, this is likely to involve extra development and installation costs for their manufacturers. As a result, these manufacturers are likely to charge higher prices to end users/pay TV operators and/or see reduced profits. Those supplying pay TV operators may be able to pass some of the cost increase onto the pay TV operators.

A6.64 As part of our CFI process we asked pay TV service providers to identify the main types of cost they would face in incorporating speaking EPG features in to the next generation of STBs. The detail of their responses varied, but based on the more comprehensive responses, including those of independent experts, and our own analysis we have identified the following categories of expense that might be faced by manufacturers:

Figure 7: cost categories and estimated impact for provision of Text to Speech (TTS) in next generation set top boxes

	Cost Category	Estimated Impact
Volume-related costs	Chipset	Nil or minimal incremental cost. Suitable chipsets to enable TTS are likely to be required by next generation multi-functional TV receivers anyway. Industry sources told us in 2014 that the premium for suitable chipsets was around 16p.
	Memory and processing power	Nil or minimal incremental cost. A next generation high end TV receiver capable of processing HD channels is likely to have the requisite memory/processing power to also undertake TTS.
	Software-based dictionary (used to recognise text and set out pronunciation rules)	There are several providers, and some free versions, but a TV service provider would want a quality solution such as those provided by Nuance or Ivona. A licence fee would be payable, depending on the volume of units shipped with dictionaries. A larger order would be likely to get a bigger discount. Overall, likely to be a modest incremental cost.
One-off costs	Speech engine (software capable of rendering text into speech)	To ensure quality, providers would probably develop in-house products (as Samsung did) or source them externally (like Panasonic). Speech engines (including free software) have been available and in use for some years (c.f. Siri, Kindle) so the basic technology is commoditised – indeed, there are a number of free versions available. As a result, we consider that the unit costs of a speech engine developed in-house or sourced externally, would probably be modest.
	Development and testing	Development costs would be incurred in integrating the hardware and software, and in testing the overall solution. However, some of the costs of testing are related to all new features in the set top box, not simply those associated with TTS. In other words, the incremental costs of development and testing of this feature would be modest.

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A6.66 Given this, and the information set out in Figure 7 above, we consider it likely that cost increases faced by manufacturers, as a result of the inclusion of text to speech in next generation multi-functional TV receivers, are likely to be modest.

A6.67 We have also considered the likely cost impact on manufacturers of the incorporation of the other accessibility features into multi-functional TV receivers (see Figure 8 below).

Figure 8: estimated impact on TV receiver manufacturers of other accessibility features

Accessibility feature	Estimated impact on TV receiver manufacturers
High contrast displays	Our understanding is that all next generation multi-functional TV receivers are likely to have the necessary hardware to allow alternative displays. This therefore suggests that there would be no (or minimal) incremental costs related to hardware. Several manufacturers already supply receivers with high contrast displays, so will face no additional costs to develop this feature.
Ability to search for / highlight programmes with audio description and signing	This feature would make use of existing metadata and mature technology, to allow viewers to search by content characteristic. In the past, metadata was not always reliable. However, reliability is improving, in part because the Digital Production Partnership, to which most broadcasters operating in the UK belong, requires that content producers incorporate accurate information on access services in the metadata associated with their programmes. The processing power required for searches is likely to be available in next generation multi-functional TV receivers. Sky's STBs already provides this capability, so their manufacturers would face no additional costs. Others provide the ability to search EPG metadata using other search criteria (e.g. genre, actor), so the incremental software development costs for those manufacturers should be relatively small. In any event the underlying technology has been widely used, and is likely to be commoditised. In our view, those manufacturers of multi-functional receivers who do not plan to enable viewers to search for different types of programme are likely to be few in number, and the incremental costs that they would face are likely to be modest.
Ability to magnify display / enlarge text	The magnification feature is already available in YouView receivers. YouView receivers include a range of advanced features (including, but not limited to accessibility tools such as high contrast screens, and the ability to link to disability-friendly interfaces). We infer that the costs of enabling magnification in other multi-functional receivers are likely to be modest, as the underlying technology has been widely used, and is likely to be commoditised.

A6.68 Overall, we consider it likely that the incremental costs of incorporating the accessibility features within multi-functional TV receivers are likely to be modest. However, we welcome any further information from stakeholders regarding these costs.

Technology providers

A6.69 The degree to which EPG licensees rely on in-house expertise to design new EPGs varies. Some, like Sky, can integrate the process of EPG design with the design of new set top boxes; others, like YouView, work with industry partners, such as Humax. Almost all draw on contributions from specialist technology providers on some aspects of their EPGs. There is a wide variety of these, including suppliers of TTS software and technology, such as Ocean Blue, Nuance and Wizzard, and EPG designers, such as Craftwork, InView, Layer3systems and SeaChange Casis.

A6.70 Ofcom's proposals may result in additional work for technology providers and so benefit this group. This may have the consequential effect of encouraging further research and development in this area.

Option 3: Specifying a more limited set of accessibility features

A6.71 Ofcom has also considered a third option, whereby the EPG Code would be amended to specify some accessibility features, but not others. For example, we considered whether Ofcom should only specify visibility features, such as high contrast displays, magnification and the ability to select or highlight programmes with audio description. This was on the grounds that these would meet the needs of many people with visual impairments, and that their practicability has been demonstrated by the fact they have already been included by some EPG providers. In this case, Ofcom might not specify the provision of TTS.

A6.72 However, this would mean that:

a) people without any useful vision would not be able to use the EPG for most purposes. If they wished to use TTS they would have to own a mobile device, download the appropriate app and master its use. We have outlined above why we consider this is not an adequate option for many of the visually impaired, see paragraphs A6.16 and A6.18 above; and

b) the larger group of people whose vision is limited would be deprived of the chance to use the additional help that TTS might offer. For example, even a person who can decipher a high contrast display may find this a lengthy and wearing process, and prefer to also use TTS if it is available. This was the experience of one partially-sighted person at Ofcom's roundtable, who explained that she had resorted to watching films on her laptop, as EPGs were too hard to navigate.

A6.73 Given that any one feature is likely to be essential to some people to provide sufficient accessibility and likely to be beneficial to many more, our initial view is that requiring a subset of the accessibility features would not fully meet the needs of the visually impaired. In other words that this option would not ensure that visually-impaired people are able, so far as practicable, to make use of EPGs for all the same purposes as persons without disabilities.

Conclusions

A6.74 Having considered the three options described above, Ofcom's provisional view, subject to consultation, is that:

a) Option 1 (doing nothing) would not meet the needs of the visually disabled. Each of the accessibility features would be beneficial to some of the visually impaired and lack of provision across the board is reducing their programming and platform choice relative to those without such disabilities. We believe that it is feasible for the EPG operators to provide these features but without regulation, provision by all operators would not occur;

b) Option 3, whereby EPG operators provide some but not all of the accessibility features would benefit some people with visual impairments, but miss out others. For example, if EPGs did not provide the ability to have programme information read out, those with severe visual impairments would not be able to make any practicable use of the EPGs, and those with less severe visual impairments would not benefit from the potential to make easier use of EPGs. Given that each of the accessibility features appears to be technologically feasible, and that the costs do not appear disproportionate, Ofcom sees no reason why people with all types of visual impairment should not be assisted to use EPGs; and

c) Option 2 offers the most appropriate means of assisting people with visual impairments to use EPGs for the same purposes as those without visual impairments.

A6.75 There are a number of reasons for this:

a) Ofcom believes that if the visual accessibility features and text to speech were required of all EPG providers, there could be significant benefits to the visually impaired. These benefits would include more social inclusion, greater autonomy and greater choice (of programmes and potentially platform operators). Whilst non-quantifiable in nature, the benefits could be significant given the numbers of people who are currently visually impaired (and likely to become visually impaired in the near future) and the nature of those people (i.e. the visually impaired tend to be older).

b) We also currently consider that our proposed policy change is unlikely to impose a disproportionate burden on stakeholders. The proposals would not apply to EPGs included in basic TV receivers. We recognise that some EPG providers might not have sufficient leverage with manufacturers of such basic receivers to require these features and that such a requirement might impose additional costs on such basic boxes which would be reflected in higher prices for consumers who are probably least able to afford them.

c) Ofcom's proposed policy would require EPG licensees to use best endeavours to ensure that new multi-functional TVs/STBs incorporate these features. This is not as stringent as an absolute obligation, and would allow Ofcom to take account of the fact that, for some EPG providers (e.g. those licensing their trademarks to third party TV receiver manufacturers), implementation could involve a lengthier process than would apply to EPG providers using in-house or contract TV receiver manufacturers.

d) The proposals are limited to new multi-functional receivers, so would not require any changes to equipment already designed and in the market. This would allow EPG providers and their manufacturing partners the opportunity to integrate accessibility features during the design and testing phases. It would mean, for example, that a model of TV receiver that had been designed before the

introduction of our proposed changes to the EPG Code could continue to be manufactured and sold until such time as it was updated or replaced.

e) For the reasons explained above, we consider that the cost impacts are also likely to be modest. Those who have already incorporated accessibility features in their current EPGs (e.g. high contrast displays) are likely to face little or no incremental cost including them in future EPGs. Those who have not done so are likely to benefit from the fact that each of these features has been included in other consumer equipment, which might suggest that the capabilities have been commoditised, and the underlying technology costs (mostly software-related) maybe relatively modest. Feedback to the CFI suggests that, in most cases, the necessary hardware for these features will already be required for other mainstream features of multi-functional TV receivers, so the incremental costs on that score should also be modest.

A6.76 Ofcom recognises that EPG providers and TV receiver manufacturers would face some increased costs, for example in testing new features, and that this might lead to higher prices for some TV receivers. However, we would expect these costs and any potential price increases to be relatively small and to be mitigated by economies of scale as new products roll out. The consultation provides an opportunity for EPG providers and TV receiver manufacturers to provide further data on costs, and Ofcom will take any such data into account before reaching a decision.

How the proposals would secure Ofcom's general duties

A6.77 In accordance with section 7 of the Act, the impact assessment must set out how, in Ofcom's opinion, the performance of its general duties (within the meaning of Section 3 of the Act) is secured or furthered by, the proposal. The size and nature of the population that would benefit from these services, suggest that there could be relatively large (though unquantifiable) benefits from requiring the provision of speaking EPGs and other accessibility requirements.

A6.78 Ofcom considers that its proposals:

a) would be likely to further the interests of consumers with visual impairments, by helping to make available to them the wider range of television services broadcast in the UK (section 3(2)(c) of the Act). The reasons for this are set out in this impact assessment and in section 3 of the main document;

b) have regard to the principles under which its regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed (section 3(3) of the Act). This consultation helps to ensure that Ofcom's proposals are both transparent and accountable. The proposals are consistent with Ofcom's duties as explained in section 2 of the consultation document and would apply in a consistent fashion to all those EPG providers supplying EPGs for use in multi-functional TV receivers. The proposals are targeted at securing the provision of accessibility features that are necessary to help people with visual impairments use EPGs. Without the changes we propose, we consider that, for the reasons given in section 3 of this document, it is not likely that all EPGs for new multi-functional TV receivers would include these features ; and

c) take account of the needs of persons with disabilities, of the elderly and of those on low incomes (section 3(4)(i) of the Act). As explained in this impact assessment, and in section 3 of the main document, the proposals take account of each of these groups.

A6.79 We are also required to assess the impact of our functions, policies, projects and practices on particular groups such as those identified by age, race, religion, disability, maternity, gender and sexual orientation. Equality Impact Assessments ('EIA') also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers.

A6.80 We have given careful consideration to whether or not the proposals set out in this document will have a particular impact on the identified equality groups.

A6.81 Our proposals focus on furthering the interests of blind and visually-impaired people and these end users stand to benefit from any improvements to the accessibility of EPGs. Furthermore, in the light of the discussion at paragraphs A6.24-A6.44, we consider that the proposed policy changes in this consultation document are likely to benefit:

a) many older people, as they constitute the majority of people with visual impairments (see Annex 2);

b) people with dyslexia, who may have difficulty reading text (see paragraph A6.30 above);

c) women, as visual impairments are almost twice as prevalent amongst women, compared to men[62]; and

d) younger people from some ethnic backgrounds. The Access Economics study noted that 'The black population has a greater risk of developing AMD compared to the white population in younger age groups, whereas the white population has a greater risk of developing AMD in the latter years of life; Asians are at lower risk than whites of AMD (Friedman et al 2004; Das et al 1994)"[63].

A6.82 We do not envisage that these proposals will have a detrimental impact on the identified equality groups. Nor have we seen the need to carry out separate EIAs in relation to the additional equality groups in Norther Ireland: religious belief, political opinion and dependants. This is because we anticipate that our proposals will not have a differential impact in Norther Ireland compared to consumers in general.

A6.83 Ofcom would welcome any comments on this impact assessment.

[62] Access Economics study, which estimated that in 2008 1.13 million [people with partial sight and blindness] (63%) were female and 664,000 (37%) were male.

[63] Access Economics study, citing (1) Freedman et al 2004 (Friedman DS, O'Colmain BJ, Munoz B, Tomany MA, McCarty C, deJong PTVM, Nemesure B, Mitchell P, Kempen J, Congdon N for the EDPRG (2004), '*Prevalence of age-related macular degeneration in the United States*', Archives of Ophthalmology, Vol. 122, pp. 564-572) and (2) Das et al 1994: Das BN, Thompson JR, Patel R, Rosenthal AR (1994), '*The prevalence of eye disease in Leicester: a comparison of adults of Asian and European descent*', Journal of the Royal Society of Medicine, Vol. 87, pp. 219-222.