



# The quality of live subtitling

Improving the viewer experience

Consultation

Publication date:

17 May 2013

Closing date for responses:

26 July 2013



# Contents

Section		Page
1	Summary	1
2	Background	4
3	The viewer experience	6
4	How subtitles are produced	15
5	How subtitles are distributed and received	20
6	Incentivising better quality subtitles	26
<b>Annex</b>		<b>Page</b>
1	Responding to this consultation	35

## Section 1

# Summary

- 1.1 Since 2005<sup>1</sup>, there has been a welcome increase in the range and amount of subtitled television programming provided by broadcasters. As a result, viewers with hearing impairments now have (and expect) access to a far wider choice of programming.
- 1.2 Subtitling for pre-recorded programmes is usually prepared in advance, which allows it to be synchronised to images, edited to a reasonable reading speed, and checked for errors. In general, therefore, pre-prepared subtitling is of good quality, though transmission problems sometimes occur.
- 1.3 However, there is now a growing quantity of live subtitling, usually for live programmes, but sometimes for topical or late-delivered content. Live subtitling entails unavoidable delays which mean that speech and subtitling cannot be completely synchronised. Errors and omissions are also not uncommon. It is clear from viewers' feedback that, while subtitle users value the opportunity to watch live TV, they sometimes find live subtitling frustrating, and, on occasion, unwatchable.
- 1.4 As explained in section 2, Ofcom has a specific duty to provide guidance on both the means and the extent to which television service providers should promote the understanding and enjoyment of their services for people who are deaf or hard of hearing, amongst other things. Ofcom's guidance is set out in its Code on Television Access Services and the associated Guidelines on the Provision of Television Access Services, as amended from time to time.<sup>2</sup> Broadcasters are required by their licences to observe this guidance.

## Ofcom's review of the quality of live subtitling

- 1.5 Given that problems with live subtitling persist, Ofcom decided last year that it should review the issues affecting the quality of live subtitling, primarily from the viewer's perspective, with a view to tackling these in conjunction with those broadcasters that account for the overwhelming majority of live or near-live programmes - the BBC, ITV, Channel 4, Channel 5 and Sky – as well as their subtitling contractors.
- 1.6 Our starting point was to gauge the experience of viewers in order to understand what they consider to be the main causes of sub-optimal quality. We have also drawn on available research to understand how the speed and presentation of subtitling can affect the quality of their viewing experience and what might be done to improve this. Section 3 summarises our findings.

---

<sup>1</sup> The Communications Act 2003 required Ofcom to produce a code giving guidance to all broadcasters on the extent to which services should promote the understanding and enjoyment by persons with hearing and visual impairments of television services and the means by which such understanding and enjoyment should be promoted. The Code on Television Access Services, which took effect at the end of 2004, requires some 70 channels to provide an increasing amount of subtitling.

<sup>2</sup> *Code on Television Access Services and Guidelines on the provision of television access services*, Ofcom, December 2012 (<http://stakeholders.ofcom.org.uk/binaries/broadcast/other-codes/tv-access-services-2013.pdf>).

- 1.7 Drawing on viewer feedback and research, we consider that the key dimensions of subtitling quality are:
- a) latency – the delay between speech and live subtitling
  - b) accuracy – mistakes which vary from minor spelling errors to major omissions or misleading subtitles;
  - c) intermittent subtitles, which freeze or disappear apparently randomly;
  - d) presentation – whether subtitles are shown scrolling across the screen, or in blocks containing one or more sentences.
- 1.8 We have also looked in more detail at how live subtitles are produced (section 4) and transmitted (section 5), in order to understand both the complexity of these processes, and how problems can occur at different stages. In general, we have found that broadcasters and subtitling providers go to considerable lengths to ensure that subtitling is of reasonable quality and is successfully transmitted to viewers.
- 1.9 In early discussions with representative groups, broadcasters, and subtitling providers, it soon became apparent that there is no one solution – to achieve an appreciable improvement in the quality of live subtitling, small improvements would be needed in several areas.
- 1.10 Ofcom is encouraged that subtitling providers are continuing to improve the systems and software used in generating live subtitling, and considers that these improvements have the potential to improve the viewer experience. In some areas, however, it appears that there might be scope for broadcasters to give greater weight to the needs of hearing impaired viewers. In particular, Ofcom believes that there may be scope for broadcasters to reduce the amount of pre-recorded programming which is delivered late, and hence has to be subtitled live.

## Next steps

- 1.11 We believe that measuring broadcasters' performance against the key dimensions of quality described above and publishing the outcome would help in a number of ways. Firstly, it would help broadcasters by highlighting those areas where individual broadcasters are doing better or worse than others. Secondly, it could incentivise broadcasters to seek improvements where they can. Thirdly, it would provide viewers and regulators with some indicators of the extent to which progress is being made, even where it may not be apparent from individual viewing experiences.
- 1.12 With this in mind, we are consulting on proposed measures of quality related to the speed and accuracy of subtitling, as well as the length of delays between speech and subtitling. For the time being, we do not think it would be helpful to combine these into a single score for each broadcaster, as this might conceal more than it would reveal. Neither are we proposing to set quality targets, as not enough is known about what would be reasonably achievable. However, we do propose to publish the results, so that broadcasters can see how they compare with one another, and consumers and Ofcom can see whether progress is being made.
- 1.13 We are also proposing to require broadcasters to report on the number of pre-recorded programmes that are accepted later than the intended 'delivery date'. We hope that broadcasters will strive to reduce the quantity of pre-recorded programming

which has to be transmitted with live subtitling, which is necessarily of lower quality than pre-prepared subtitles.

- 1.14 In addition, we will be asking broadcasters to provide information on the number and causes of technical failures in the provision of subtitling as advertised, in order that we can understand whether there are particular aspects of the production or transmission processes that require attention.
- 1.15 We believe that it would be in the public interest to encourage broadcasters to be as frank as possible in providing information, and we recognise that as the processes often involve multiple parties, there may be issues of commercial confidentiality. For this reason, we propose to publish the information collected in a form that will preserve that confidentiality.
- 1.16 Finally, we are asking broadcasters for their views on the scope for delaying the transmission of some 'live' programmes slightly, which subtitling providers say would allow sufficient time to make an appreciable difference to the quality of subtitling provided.
- 1.17 We would welcome comments on the questions posed in this consultation by 26 July 2013. We expect to publish a statement on the outcome by late 2013 or early 2014.

## Section 2

# Background

## Introduction

2.1 In this section, we explain Ofcom’s duties relating to subtitling of television programmes for people who are deaf or hard of hearing, and why we have decided to look at what can be done to improve the quality of live subtitling in particular.

## Ofcom’s statutory duties and powers

2.2 Section 3 of the Communications Act 2003 (“the Act”) requires, amongst other things, that in carrying out its duty to further the interests of citizens and consumers, Ofcom should have regard to the needs of persons with disabilities.

2.3 Section 303 of the Act requires that Ofcom prepare (and review from time to time) a code giving guidance to broadcasters on how they should promote the understanding and enjoyment of their services by people with sensory impairments, including people with hearing impairments. The code must include:

- a) guidance on the means by which the understanding and enjoyment of television services should be promoted. This is largely comprised within the guidelines in Annex 4 of Ofcom’s code;
- b) provision for securing that every provider of a service ensures that adequate information about assistance for people with disabilities is made available. This is required by paragraphs 35 and 36 of the code;
- c) obligations for the amount of subtitling, signing and audio description to be provided, which may include interim targets. These are set out in paragraphs 8 to 10 of the code; and
- d) the descriptions of programmes to which those obligations shall not apply. This may include, in special cases, all the programmes included in a service. These provisions are set out in paragraph 11 of the code.<sup>3</sup>

2.4 Ofcom is required by section 307 of the Act to ensure that all Broadcasting Act licences require licensees to observe the code, and appropriate conditions have been included in all such licences. The BBC Agreement also requires the BBC to observe the code in respect of its public television services subject to any exclusions agreed between Ofcom and the BBC.<sup>4</sup>

## Why Ofcom decided to look at live subtitling

2.5 Until 2004, subtitling was largely confined to a small proportion of programming on a handful of public service and digital channels. Following the coming into force of the Act, and the publication of Ofcom’s Code on Television Access Services, there was a

---

<sup>3</sup> *Code on Television Access Services*, Ofcom, December 2012 (<http://stakeholders.ofcom.org.uk/binaries/broadcast/other-codes/tv-access-services-2013.pdf> )

<sup>4</sup> Clause 59, *Broadcasting: An Agreement Between Her Majesty’s Secretary of State for Culture, Media and Sport and the British Broadcasting Corporation*, July 2006 ([http://www.bbc.co.uk/bbctrust/assets/files/pdf/about/how\\_we\\_govern/agreement.pdf](http://www.bbc.co.uk/bbctrust/assets/files/pdf/about/how_we_govern/agreement.pdf))

step change in the number of channels providing subtitling. Some 70 channels now provide subtitling, and the amount has risen from 10% on most such channels in 2005, to 80% or more in 2013.

- 2.6 Alongside the enormous increase in the quantity of subtitling, complaints about its quality persist. When Ofcom last looked at this issue in the context of a wide-ranging review in 2006, we identified concerns with speed, delays and accuracy, particularly in relation to live subtitling, as well as technical problems with the transmission and reception of subtitles. Feedback suggested that more people thought that the quality of live subtitling was improving than considered it was getting worse. Ofcom expressed the hope that many of the technical problems that gave rise to quality problems would be resolved as the technology matured.<sup>5</sup>
- 2.7 However, complaints from viewers and Ofcom's own observations suggest that there are continuing problems with the quality of live subtitling in particular. It has been argued that human error and technical complexity render the problems affecting the quality of live subtitling intractable. With this in mind, as explained in section 2, Ofcom considered that:
- a) there would be value in examining what contributes to or detracts from the quality of subtitling from the viewer's perspective;
  - b) the main focus should be on live subtitling, which is more prone to errors and delays than pre-prepared subtitling;
  - c) there might be scope for small but significant improvements in respect of different aspects of quality;
  - d) taken together, these improvements could make an appreciable difference over time to the quality of the viewing experience for those relying upon subtitles to understand and enjoy television.
- 2.8 In the iterative process that followed, Ofcom:
- a) noted the feedback indicating that live subtitling in particular remained problematic, and identifying individual problems;
  - b) undertook a trawl for research relating to those problems, which was helpful in establishing the facts behind the understandably non-scientific observations of subtitle users;
  - c) tested emerging views about the range and significance of problems affecting the quality of the viewing experience with subtitle users, advocacy groups, broadcasters and access service providers.

---

<sup>5</sup> *Television Access Services – Review of the Code and Guidance*, Ofcom, March 2006 (<http://stakeholders.ofcom.org.uk/binaries/consultations/accessservs/summary/access.pdf>)



## Section 3

# The viewer experience

## The audience

- 3.1 For most people, television is an integral part of their lives. There is scarcely a household in the land without a television, and on average, we each watch some four hours of television a day<sup>6</sup>. Television is one of the most popular forms of entertainment, as well as being an important source of information. Consumers with hearing impairments like to watch television just as much as those without – in fact research conducted for Ofcom in 2006 found that viewers with hearing impairments watched significantly more than those without.<sup>7</sup>
- 3.2 As hearing loss is a natural part of ageing for most people, many subtitle users are older people.<sup>8</sup> But they are drawn from all age groups, including the very youngest, who are just learning to read.<sup>9</sup> Many people without hearing impairments also use subtitles from time to time<sup>10</sup>, but Ofcom’s focus is on subtitling for those viewers who rely upon them to understand and enjoy television.
- 3.3 In this section, we discuss viewers’ experience of using live subtitles, and how it affects the quality of their viewing. While Ofcom accepts that there are occasional problems with the quality of pre-prepared subtitling, we consider that the issues with live subtitling are an order of magnitude greater, and that the priority should be to tackle the issues affecting its quality.

## The context

- 3.4 Before 2005, subtitling (and other access services) were largely confined to public service channels, such as the BBC and ITV. Even for these channels, television access services were not generally available on cable and satellite.
- 3.5 The Communications Act 2003 enabled Ofcom to extend requirements to many more channels, including the growing number available by cable and satellite. The approach taken by Ofcom – to require channels with an audience share of 0.05% or more to provide television access services - means that over 90% of viewing in the UK is to channels that are required to provide some subtitling. Ofcom also sought to ensure that television access services were provided when channels were broadcast by cable and satellite.

<sup>6</sup> Ofcom (2012), *The Communication Market Report: UK*, Figure 2.42 ‘Average hours of television viewing per day, by age, all homes’, UK.

([http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr12/UK\\_2.pdf](http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr12/UK_2.pdf))

<sup>7</sup> Ofcom (2006) *Provision of Access Services - Research Study Conducted for Ofcom*, pp 21-22.

(<http://stakeholders.ofcom.org.uk/binaries/consultations/accessservs/annexes/provision.pdf>)

<sup>8</sup> A.C. Davis (1990) *Epidemiological profile of hearing impairments: the scale and nature of the problem with special reference to the elderly*, MRC Institute of Hearing Research, Nottingham University, UK. (<http://www.ncbi.nlm.nih.gov/pubmed/2087969>)

<sup>9</sup> Deafness Research UK (2012), *About childhood deafness*,

(<http://www.deafnessresearch.org.uk/content/your-hearing/children-deafness/childhood-deafness/>)

<sup>10</sup> Ofcom, March (2006), *Provision of Access Services - Research Study Conducted for Ofcom*, pp 4.4

(<http://stakeholders.ofcom.org.uk/binaries/consultations/accessservs/annexes/provision.pdf>)

- 3.6 Initial targets are low – just 10% - but they rise progressively to 80%. Those channels that began to provide subtitling in 2005 now have to subtitle at least 70% of their content, and this will rise to the maximum statutory target of 80% in 2014. In fact, as a recently published report shows, many channels already provide more subtitling than they are required to, including several of those operated by the BBC, ITV, Channel 4, Channel 5 and Sky.<sup>11</sup>
- 3.7 Not all television programmes are subtitled, which is disappointing for hearing-impaired viewers who want to watch them. But the choice of subtitled programming available to hearing-impaired viewers has increased considerably. Since 2005, subtitling has been available on some 70 channels, providing general entertainment programming, news, films, sport, children’s programmes, and documentaries among others.
- 3.8 Initially, most of the subtitling was for pre-recorded content, so viewers had little access to live programming. But as targets rose it became necessary for broadcasters to subtitle more live programming in order to meet their obligations. Although Ofcom accepted that subtitling live programmes was more difficult than subtitling pre-recorded programmes, it resisted pressure to exempt live programming altogether. As a result, the amount of live subtitled programming has increased markedly in recent years, and hearing-impaired viewers have come to expect a similar level of access to television as other consumers.

## The importance of understanding the consumer experience

- 3.9 People without hearing impairments might be forgiven for believing that, by muting the television and switching on subtitles for a brief period, they can understand the experience of those who rely upon subtitles to understand and enjoy television. A more complex picture emerges when talking to subtitle users, and this is helpful in appreciating which aspects of subtitling most affect the quality of their viewing experience.
- 3.10 But even hearing-impaired viewers may not be aware of the subtleties of how they use subtitles, how much benefit they derive, and how this may impact upon their viewing experience. For this reason, we have also taken account of research in this area, and talked to academics working in the field.
- 3.11 We discuss first what we have learnt from viewers with hearing impairments, before summarising the lessons from research, and drawing out the key dimensions of quality.

## What we learnt from viewers and others

- 3.12 In order to understand more about the viewer experience of subtitling, we have:
- a) reviewed the complaints about subtitling made by viewers to Ofcom in recent years, and talked to broadcasters about the nature of the complaints they receive;

---

<sup>11</sup> Ofcom (2013), *Television Access Services: Final Report for 2012*. (<http://stakeholders.ofcom.org.uk/market-data-research/market-data/tv-sector-data/tv-access-services-reports/2012-report>)

- b) talked to bodies representing the interests of people with hearing impairments, such as Action on Hearing Loss (AHL – formerly RNID), the Telecommunications Action Group (TAG)<sup>12</sup>, and the National Association of Deafened People (NADP);
- c) conducted a roundtable with broadcasters, access service providers, representative bodies and subtitle users to discuss the quality of live subtitling; and
- d) taken account of findings from the qualitative survey of hearing-impaired viewers commissioned by AHL in the light of Ofcom’s decision to look at the quality of live subtitling.<sup>13</sup> Although the survey was drawn up by AHL (an advocacy body) and is not based on a nationally representative sample of people with hearing impairments, it does help to illustrate the problems that respondents say they encounter when using live subtitling, which reflect those referred to in complaints to Ofcom.

3.13 A number of themes have emerged from this feedback.

## Delays

*“Subtitles so far after speech as to be useless and very irritating....the newscaster has gone on to the next item before the subtitles appear in the screen” – respondent to AHL survey*

*“If an obscure word is used by a speaker, there is often a delay of some seconds while the system finds that word for subtitling. The effect is often that the next few seconds of speech is completely missed, and this might be more important than the earlier missed word. Please maintain continuity, even at the risk of the occasional missed word, which can usually be 'worked out' by context in any case.” – respondent to AHL survey*

- 3.14 The number one concern of respondents to AHL’s survey was the delay between action on screen and subtitling. The ‘word cloud’ in Figure 1, based on responses to the survey, gives a flavour of this – the word ‘delay’ is the most prominent, and there are also related references to ‘delayed’, ‘delays’, ‘lagging’, ‘lag’, ‘late’, ‘match’, ‘sync’, ‘synch’, ‘synchronisation’, and ‘late’.
- 3.15 Viewers find it difficult and frustrating to have to juggle information from the image on screen and subtitles relating to images which have disappeared. It is easy to appreciate that relying on unsynchronised subtitling will make the viewing experience much less enjoyable than for someone who is able to hear speech and sound effects synchronised with the action on screen. In some cases, viewers say that it becomes intolerable, forcing them to switch off the subtitles (for example, if they are watching a sports event), switch to another programme, or switch off the television altogether.

<sup>12</sup> Now the Deaf Access to Communications group of the UK Council on Deafness (<http://deafcouncil.org.uk/news/2012/10/01/press-release-2/>)

<sup>13</sup> Action on Hearing Loss (2012), *User Experience Survey 2012*. (<http://www.actiononhearingloss.org.uk/get-involved/campaign/access-to-tv-and-the-web/tell-ofcom-what-you-think-about-subtitles.aspx>)

Figure 1: word cloud based on responses to AHL’s survey



### Accuracy: errors and omissions

*“Snippets of info are sometimes left out completely and my husband will often have to fill them in for me when I don't know anything about what has been said.” – respondent to AHL survey*

*“The misreporting is continuous. I respect that most is human error but things like 800 people died on news then later news gives 8 people died is a gross misinterpretation of what happened.” – respondent to AHL survey*

- 3.16 Almost as many respondents to AHL’s survey were concerned about the accuracy of subtitles. In many cases, it is easy (if somewhat wearing) for viewers to guess what is meant. Viewers accept that some mistakes are inevitable, for example when homophones of the right word are mistakenly shown, such as ‘their’ in place of ‘there’ or ‘they’re’.
- 3.17 But in other cases, the subtitles may be so garbled as to be unintelligible. Worse still, in some situations, a plausible error (such as the substitution of ‘15%’ for ‘50%’) may lead the viewer to believe that they understand the meaning, when they are actually being misinformed.

## Temporary loss of subtitling

- 3.18 Nearly half of the respondents to AHL said that intermittent subtitling during programmes affected their enjoyment. Technical faults or human error sometimes mean that subtitles cease part way through a programme (for example, failing to return after an advertising break). While broadcasters generally monitor playout, it is not always possible to restore subtitles quickly, leaving the viewer with the dilemma of whether to struggle on, or abandon the attempt. It is easy to understand how frustrating this must be, particularly if the programme in question forms part of series.

## Availability of subtitling

- 3.19 In addition to problems outlined above with the actual subtitling provision, a quarter of the respondents to the survey by Action on Hearing Loss also highlighted a common problem, which was that programmes advertised as ‘with subtitles’ sometimes did not have subtitles broadcast at all.

## Lessons from research

- 3.20 There has been a growing amount of research in recent years on how people use subtitling, and how the way subtitling is produced and presented affects the benefits derived by users.<sup>14</sup> We have looked in particular at research focussing on those issues which feedback from viewers and others suggest have a direct impact on the quality of the viewing experience:
- a) how different types of error can be categorised, and the effects of different error categories on comprehension;
  - b) how the speed of subtitling can affect recall and the time viewers are able to spend looking at images as well as subtitles;
  - c) how the presentation of subtitles can affect the time viewers are able to spend on looking at images as well as subtitles;
  - d) what research tells us about the actual latency of subtitling.

## Inaccuracies: minor versus major errors

- 3.21 For the time being, it is inevitable that errors will creep into live subtitling. Perfection is not achievable because there is not enough time to carefully edit the text, nor transcribe it and correct any errors.<sup>15</sup> Some errors have a more significant effect on understanding than others, and researchers have endeavoured to categorise errors by reference to their impact on viewers.
- 3.22 In an attempt to develop an automated subtitle accuracy assessment system, the WGBH National Centre for Accessible Media<sup>16</sup> undertook a subtitle viewer survey, in

<sup>14</sup> Media for All 3<sup>rd</sup> international conference (2009), ‘Quality Made to Measure’

(<http://www.mediaforall.eu/all3/>) and Media for All 4<sup>th</sup> international conference (2010) ‘Audiovisual Translation: Taking Stock’ (<http://www.imperial.ac.uk/humanities/translationgroup/mediaforall4/>)

<sup>15</sup> Andrew Lambourne (2006) ‘Subtitle Respeaking: A new skill for a new age’, SysMedia Ltd, UK and. Aline Remael & Bart van der Veer (2006) ‘Real-Time Subtitling in Flanders: Needs and Teaching’, Hoger Instituut voor Vertalers en Tolken, Antwerp.

<sup>16</sup> Tom Apone, Marcia Brooks, Trisha O’Connell (2010), ‘Caption accuracy metrics project – Caption viewer survey: Error ranking of real-time captions in live television news programs’ WGBH National

which they ranked subtitling errors in television news programmes. Participants were asked to comment on whether or not they noticed the error, whether the error bothered them, and if it did bother them, how much they felt it would impact their understanding.

- 3.23 Four different types of errors were identified: mild substitutions, insertions, deletions and severe substitutions. The responses which were received were then analysed by the project team and advisors, and 17 sub-categories of common caption error types were identified. Some examples of severe errors include garbling caused by transmission problems and major deletions that impact the meaning of a sentence. The least problematic errors included errors in punctuation and simple substitutions such as using the wrong tense. This research has been used in the development of the WWER model which is explained later on in this document.
- 3.24 Pablo Romero-Fresco's work in this area<sup>17</sup> usefully highlights the types of errors that can occur and the degree to which they impact on people's comprehension of the programme. His work suggests that there are broadly three different levels of severity in the errors made:
- a) minor errors – that have a very limited impact on comprehension – such as “*what a great goal by a Ryan Giggs*” or “*For people are still missing*”;
  - b) standard errors – where the impact on comprehension is serious but viewers are aware that there has been an error – “*He's a buy you bull asset*” instead of “*He's a valuable asset*”; and
  - c) serious errors – change in the meaning of the text where viewers may not even be aware that there has been an error – “*Funding has been increased by 15%*” when the correct figure is 50%.

### Speed of subtitling

*“When the presenter was talking about the USA elections there was a long time before the subtitles came up in relation to the images. Then all the words and sentences came up at once, so fast, it was impossible to read all before the whole item finished. Very frustrated indeed!”* – respondent to AHL survey

- 3.25 Research suggests that the speed of subtitling (as measured in ‘words per minute’ (“wpm”)) has an impact both on the levels of comprehension, and on the amount of time viewers are able to watch what is happening on screen, as opposed to reading subtitles. Human beings cannot read as fast as they speak, and Jensema found the most comfortable speed was about 145 wpm. At a rate of more than 180 wpm, deaf, hard-of-hearing and hearing readers found it difficult.<sup>18</sup>
- 3.26 In Australia, a study of proficient readers who were hard of hearing showed that if subtitling speed is increased from 130 wpm to 230 wpm comprehension decreases

---

Center for Accessible Media, Boston ([http://ncam.wgbh.org/file\\_download/131](http://ncam.wgbh.org/file_download/131)). WGBH is the largest of the public service broadcasters in the United States.

<sup>17</sup> Pablo Romero- Fresco and Juan Martínez (2011), ‘*Accuracy Rate in Live subtitling – the NER Model*’, Roehampton University, UK

(<http://roehampton.openrepository.com/roehampton/bitstream/10142/141892/1/NER-English.pdf>)

<sup>18</sup> Jensema (1998), cited in Pierre Dumouchel, Gilles Boulianne and Julie Brousseau ‘Measures for quality of closed captioning’, CRIM, Canada.



from 48% to 31%.<sup>19</sup> This informed the Australian Government's decision to introduce mandatory standards of quality in subtitling,

- 3.27 Work in the UK at Roehampton University<sup>20</sup> suggests that increasing wpm from 180 to 220 results in a marked decrease in people's understanding of the information that is being communicated. Similar findings have been demonstrated in research by Neves (2005)<sup>21</sup> (also in the UK) and Santiago-Araujo (2004)<sup>22</sup> (looking at Brazilian subtitles). Both found that when subtitles were displayed at 180wpm or faster (even those with good synchronisation and line breaks), they presented a great deal of difficulty for deaf viewers, and even some who were hard of hearing.
- 3.28 As Romero-Fresco has pointed out, comprehension is not simply about taking in the words (or sound) associated with the programme. Television for the non-sensory impaired is essentially a visual experience, but increased subtitling speed can turn watching television into a reading experience for subtitle users. The speed of the subtitles has a direct impact on the amount of time viewers can devote to the images.
- 3.29 Looking at eye-tracking data obtained in Poland, the UK and Spain in the DTV4ALL project, and in South Africa<sup>23</sup> by Hefer (2011), Romero-Fresco found that 'a speed of 150 wpm leads to an average distribution of 50% of the time on the subtitles and 50% on the images. A faster speed of 180wpm yields an average of 60-65% of the time on the subtitles and 40%-35% on the images, whereas 200 wpm only allows 20% of the time on the images.'<sup>24</sup>

## Presentation

- 3.30 Research suggests that the experience of watching television also becomes less visual for subtitle users if broadcasters display subtitles in a scrolling format, where words appear one at a time in rapid order, as opposed to in a solid block, where subtitles are only put up in full sentences or lines of text. According to eye-movement metrics, grouping text (sometimes known as 'text chunking') by phrase or by sentence reduces the amount of time spent on subtitles, and presents the text in a way that is more easily processed.<sup>25</sup>
- 3.31 It has been argued that this is due to the way in which people read: "...our eyes do not sweep continuously across the page (or the screen) when we read. Instead, they

<sup>19</sup> Denis Burnham of the University of Western Sydney, Greg Leigh of the University of Newcastle, Australia, William Noble of the University of New England, Australia, Caroline Jones of the University of Western Sydney and the University of Wollongong, Michael Tyler and Leonid Grebennikov of the University of Western Sydney and Alex Varley of Media Access Australia (2008) 'Parameters in Television Captioning for Deaf and Hard-of-Hearing Adults: Effects of Caption Rate Versus Text Reduction on Comprehension', *Journal of Deaf Studies and deaf education, Australia* (<http://www.ncbi.nlm.nih.gov/pubmed/18372297>)

<sup>20</sup> Dr Pablo Romero-Fresco (2010) *Standing on Quicksand: Viewers' Comprehension and Reading Patterns on Respoken Subtitles for the News*, Roehampton University.

<sup>21</sup> Josélia Neves (2005) *Audiovisual Translation: Subtitling for the Deaf and Hard-of-Hearing*, Roehampton University.

<sup>22</sup> Vera Lúcia Santiago-Araújo (2004) *'Closed subtitling in Brazil'*, cited in Pilar Orero (ed) *Topics in Audiovisual Translation*. John Benjamins Publishing.

<sup>23</sup> Este Hefer (2011), *Reading second language subtitles: A case study of Afrikaans viewers reading in Afrikaans and English*, Unpublished MA Dissertation, Vaal Triangle Campus of the North-West.

<sup>24</sup> Dr Pablo Romero-Fresco (2011) *'Accuracy Rate in Live Subtitling – the NER model'*, Roehampton University.

<sup>25</sup> Dhevi Rajendran, Andrew Duchowski, Pilar Orero, Juan Martinex and Pable Romero-Fresco (2012) *'Effects of text chunking on subtitling: A quantitative and qualitative examination'* in *Perspectives: Studies in Translatology*. Routledge Taylor & Francis Group.

pause and rest for short periods of 110ms 500ms, which are called fixations. These are the moments at which we retrieve the visual information that we need.”<sup>26</sup>

- 3.32 Participants in an eye-tracking experiment at Roehampton University were shown two news clips with subtitles displayed first in scrolling mode and then in blocks of two lines, with the aim of understanding the balance of time spent on images versus text, and the number of times that the viewer found it necessary to pause on the text in order to make sense of it. The results were as follows:

**Figure 2: impact on viewers of different modes of subtitle presentation**

Viewers	Number of fixations		Time spent on images	
	Blocks	Scrolling	Blocks	Scrolling
Hearing	3.75	6.00	33.30%	11.70%
Hard-of-hearing	3.75	6.50	33.20%	11.40%

- 3.33 Similar research was carried out by Martínez and Linder (2010)<sup>27</sup> with comparable findings; viewers spent around twice as many fixations to scrolling subtitles as they did to block subtitles, and thus, scrolling viewers spent more time processing the text than they did the visuals on screen.

## Latency

- 3.34 The way in which live subtitling is produced, explored in more depth below, can result in a delay between words being spoken on screen and the subtitles appearing, with delays being “a natural consequence of the way in which live subtitles are made.”<sup>28</sup>
- 3.35 Some research suggests that the average delay is anywhere between three and ten seconds, and sometimes longer.<sup>29</sup> Research into what viewers consider to be a ‘tolerable’ delay when watching live subtitles found that a delay of less than five seconds is considered tolerable, but ideally delays should be [no more than] three seconds.<sup>30</sup> In Denmark, a study of TV news with live subtitling found that a delay of typically seven seconds between what was said and the subtitles appearing made TV news very difficult for viewers to follow.<sup>31</sup> Just under half of participants in a UK survey found the current delay of subtitles on UK TV channels unsatisfactory.<sup>32</sup>

<sup>26</sup> Rayner & Pollatsek (1989), cited by Dr Pablo Romero-Fresco (2011) in ‘*Quality in Live Subtitling: The Reception of Respoken Subtitles in the UK*’, Roehampton University, (2011)

<sup>27</sup> J Martínez and G Linder (2010) ‘*The reception of a new display mode in live subtitling*’ (2010) in M Carroll, J Diaz Cintas, Y Gambier and M O’Hagan (Eds.) *Eighth languages & the media conference*.

<sup>28</sup> Anni Rander and Peter Olaf Looms (2010) ‘*The accessibility of television news with live subtitling on digital television*’, Danish Broadcasting Corporation.

<sup>29</sup> *ibid.*

<sup>30</sup> Richard McNicoll (2001) ‘*Les normes stylistiques de sous-titrage*’, cited by Pierre Dumouchel, Gilles Boulianne, Julie Brousseau (2008), in ‘*Measures for quality of closed captioning*’, Centre de recherche informatique de Montreal.

<sup>31</sup> Rander and Looms (2010) *ibid.*

<sup>32</sup> Pablo Romero-Fresco (2012) ‘*Quality in Live Subtitling The Reception of Respoken Subtitles in the UK*’, Roehampton University.



## The key dimensions of subtitling quality

- 3.36 In summary, feedback from viewers, and evidence from research strongly suggest that the following factors affect the understanding and enjoyment of television viewing by people who rely upon subtitles:
- a) the speed of subtitling: though reading ability amongst hearing impaired people will vary significantly, as it does for others, the research suggests that speeds above 180 wpm do not promote the understanding and enjoyment of television. <sup>33</sup> Indeed, by forcing viewers to concentrate very hard on the subtitles, faster subtitles detract from the enjoyment of TV viewing;
  - b) the latency of subtitling: the delay between action on screen and associated subtitles make the task of comprehending a programme much more difficult than if subtitles are synchronised, as is possible with pre-prepared subtitles. This is ranked by viewers as more important than the number of errors in texts. Most viewers point out that it is more difficult to relate images to delayed subtitles than to understand what was originally meant in a programme despite the mistakes. <sup>34</sup>
  - c) inaccuracies in subtitling: even minor errors in subtitling require viewers to spend more time working out what was intended, or result in additional delay as the errors are corrected. More significant uncorrected errors may make it difficult for viewers to understand what is being said, or may mislead them. Errors appear relatively common in programmes that are subtitled live; and
  - d) the presentation of subtitles: scrolling subtitles demand significantly more attention from viewers than do block subtitles, reducing the amount of time they are able to watch images, and forcing them to rescan subtitles in case they have missed content.
- 3.37 In addition, subtitles that fail part way through a programme or do not appear as advertised are a source of particular frustration to viewers, who may have planned their viewing around the availability of subtitling, and are thwarted by circumstances apparently beyond their control. Garbling caused by transmission problems was ranked as the most severe error among respondents to the WGBH National Center for Accessible Media subtitle viewer survey of errors in real-time captions in live television news programmes. <sup>35</sup>
- 3.38 Well-edited and synchronised subtitles are no barrier to the enjoyment of television programmes, as the popularity of some foreign language programmes shows. But for people relying on live subtitling, television viewing can be very far from the relaxing and enjoyable occasion that it is for others. Viewing subtitled programmes can be a somewhat disjointed experience, when delays in the display of subtitles, correction of errors, and non-regular patterns of display can all combine, resulting in viewers struggling to relate the subtitles to the action on screen. Viewers with hearing impairments are compelled to concentrate harder than others in order to decipher what is going on, and are even likely to have an impoverished viewing experience.

<sup>33</sup> Pablo Romero-Fresco (2012) '*Quality in Live Subtitling The Reception of Respoken Subtitles in the UK*', Roehampton University.

<sup>34</sup> *ibid.*

<sup>35</sup> Tom Apone, Marcia Brooks, Trisha O'Connell (2010), '*Caption accuracy metrics project – Caption viewer survey: Error ranking of real-time captions in live television news programs*' WGBH National Centre for Accessible Media, Boston ([http://ncam.wgbh.org/file\\_download/131](http://ncam.wgbh.org/file_download/131))

## Section 4

# How subtitles are produced

## Introduction

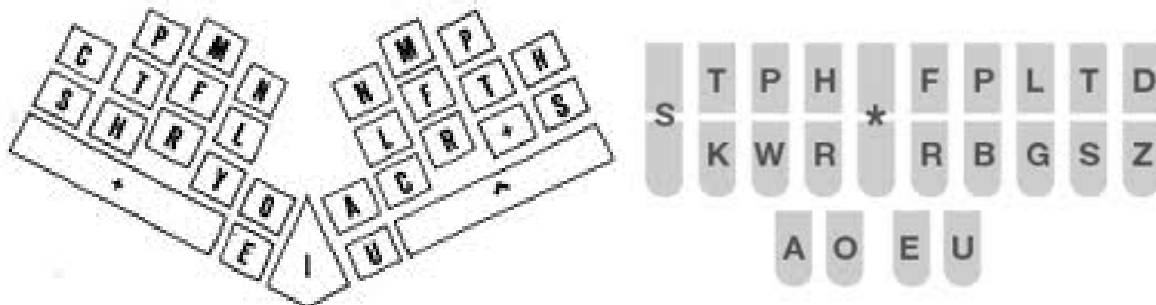
- 4.1 The large increase both in channels required to provide subtitling and the subtitling targets they must meet has driven change in the way that live subtitling is produced. Initially, stenographers and palantypists (who prepare verbatim transcripts for courts and Hansard) as well as fast typists acting in relays were used to prepare live subtitles. However, as demand for live subtitling increased, it exceeded the capacity of qualified stenographers and palantypists. In response, a new technique, which combined ‘respeaking’ with automated voice recognition to generate live subtitles, was developed, and this is now in widespread use.

## Production methods

### Keyboard entry

- 4.2 Until relatively recently, most live subtitling was prepared using keyboard operators, including fast typists using conventional QWERTY keyboards, and speech to text reporters using palantype or stenograph keyboards. The latter systems require the operators to press combinations of keys simultaneously to produce whole words.

Figure 3: layout of palantype and stenograph keyboards



- 4.3 Stenographers and palantypists are highly skilled professionals, with training lasting anywhere between two and five years. They subtitle at speeds of up to 200 wpm, and can achieve high levels of accuracy.<sup>36</sup> However, though stenographers, palantypists and fast typists are still used from time to time to create subtitles, the pool of skilled operators is now too small to support the number of programmes now being subtitled live.

### Voice recognition

- 4.4 The shortages and cost of employing specialist keyboard operators, coupled with improvements in voice recognition technology, led to the development of a technique called ‘respeaking’, which now accounts for the majority of live subtitling, and is often

<sup>36</sup> You can find out more about how stenography works at <http://www.redbeemedia.com/blog/how-does-stenography-work>.

used in the production of pre-prepared subtitles. We explain below how respeaking works.

## Respeaking

- 4.5 For the purpose of producing subtitles, a respeaker listens on headphones to what is being said on television, and repeats this into a microphone linked to computers equipped with voice recognition software. The speech is then broken down into its individual sound components (phonemes). By comparing the combinations of phonemes recognised by the software with common combinations in its 'library', the software can then predict the likely word or phrase, and produce subtitles. The subtitles are then displayed on screen and can be edited by the operator before they are transmitted.
- 4.6 Voice recognition software is not yet capable of generating reasonably accurate subtitles directly from a television soundtrack - the software cannot cope with a variety of different voices, with two or more voices speaking at once, or with pronounced inflexions.<sup>37</sup> While considerable efforts have been made to produce subtitles direct from a soundtrack, the results to date have not been satisfactory.

## Training

- 4.7 Respeakers are given in-depth initial training over several months. During this time they build their own voice recognition profile (enabling the software to be attuned to the individual's voice across a wide range of vocabulary) and practise on different genres, developing a variety of skills. Eventually, the respeaker will be assessed as having the necessary skills to start providing live subtitling, initially on less demanding programmes. Following their initial training, respeakers are regularly re-assessed, through a combination of self, peer and managerial assessment.

## Pre-broadcast preparation

- 4.8 Respeakers generally prepare for around an hour in advance of each broadcast, so that they are familiar with any specialist vocabulary that may be used, and with guidance specific to the nature of a particular programme.
- 4.9 Subtitle producers often have specific editorial guidelines for each genre. For instance, for sports programming, these guidelines would outline how subtitles should dovetail with the on-screen action. This includes the position of subtitles on-screen and the duration they remain up (to avoid blocking the action) and whether to aim for largely verbatim or significantly edited subtitles. For example, guidelines may say that commentary should not be subtitled during a tennis point, or during short sprint races, but should be summarised at the conclusion.
- 4.10 Preparation of vocabulary is also important. In the case of news programmes, this may involve researching topical stories, including unusual place names etc. Subtitlers will often create special lists (or 'dictionaries') associated with particular programmes or types of programme, including macros for key phrases. This can be particularly useful where, for example, a horse's name might not be recognised as a proper name, as in 'Armed and Dangerous', a situation every subtitle user will be familiar with.

---

<sup>37</sup> You can find out more about how respeaking works at <http://www.redbeemedia.com/blog/3-popular-myths-about-subtitling>.

- 4.11 In doing so, they may be able to draw on the running order for the programme, as well as some scripted material and pre-prepared inserts. However, the content of live programmes can change at short notice, so subtitlers need to be prepared to respond to unforeseen changes. For example, a live news programme may not be scripted until very close to transmission, and is likely to contain live inserts from correspondents and interviews.
- 4.12 Even in these circumstances, subtitlers will prepare in a number of different ways, such as identifying news stories likely to be covered, using the running orders compiled in news rooms and made available to access service providers, and inserting relevant vocabulary. Where they can obtain ‘packages’ prepared by correspondents, they will subtitle these in advance so that better quality subtitles can be played out during the programme.

### **Subtitling live**

- 4.13 Having completed his or her preparations, the respeaker is now ready to produce subtitles. Normally, the respeaker will have a direct feed from the broadcaster, so will be able to hear the output a few seconds earlier than if relying on the broadcast service.
- 4.14 During respeaking, the subtitler has to carry out multiple tasks:
- editing the text before respeaking if the full text would result in long delays or excessively rapid subtitles;
  - voicing the punctuation that needs to be inserted (e.g. “full stop”);
  - voicing any macros that are needed to insert pre-prepared phrases (such as topical place names) or avoid inappropriate homophones;
  - voicing any sound effects that need to be inserted;
  - selecting the position of subtitles on screen (for instance, to avoid covering people’s faces and mouths or other on-screen written information);
  - selecting the colour of the subtitles (used to differentiate between multiple on-screen speakers);
  - reading the draft subtitles, assessing them for comprehensibility and accuracy, and correcting or editing them if necessary;
  - releasing the subtitles for transmission. The software then controls the rate at which they appear on screen in order to keep speeds within pre-determined limits; and
  - liaising with the person who will take over from them, who may be based in the same building, or in another part of the country.
- 4.15 To carry out all the tasks described above while minimising mistakes, respeakers must maintain a high level of concentration. Depending on the nature and length of the programme, they may work for 15 to 45 minutes before handing over to a colleague.

## Potential problems

### Operational errors

- 4.16 Operational errors (both human and technical) in the subtitling facility can result in subtitling problems. Examples include:
- a) the loss of sound from the studio, obliging the respeaker to rely on the on-air feed, thus increasing the subtitling delay;
  - b) unexpected technical failures in one of many systems involved in producing the subtitles, or sending them to the playout facility;
  - c) a lapse of attention on the part of the respeaker, leading to content being missed or errors being made; and
  - d) the unplanned absence of a relief respeaker, so that the original respeaker has to carry on for longer than planned, resulting in fatigue and an increased likelihood of errors.

### False recognition

- 4.17 Voice recognition software is not infallible. For example, differences in emphasis may result in a false recognition, such as 'grand parade' being rendered as 'grandpa raid'. In the case of words with many homophones (such as Chile, chilly, or chilli), the software may not recognise the appropriate spelling. Slight changes to the voice of the respeaker (if he or she has a cold, for instance) can also degrade the efficacy of voice recognition.
- 4.18 Although the voice recognition software has access to a large dictionary of words, often updated before the broadcast, there will be occasions when unexpected words crop up, and are not properly recognised. A breaking news story featuring unfamiliar people or place names may well lead to garbled subtitles.

### Delays resulting from corrections

- 4.19 Once subtitles are displayed on screen, respeakers are also required to make decisions on the spot about what should be corrected. They make these decisions at the same time as continuing to listen to the broadcast. Each correction puts extra pressure on the respeaker to catch up with the broadcast – during the time needed to make a correction, the programme will have moved on. The greater the number of corrections made, the greater the likelihood that further errors will occur. This is particularly true for fast-paced broadcasts, such as news, where the word rate per minute is relatively high.
- 4.20 Ultimately the respeaker may have to decide whether to make a correction or omit some speech in order to catch up. Sometimes this can be done without detracting from the integrity of the subtitling, but this is not always the case. For this reason, subtitling providers generally advise their staff not to correct minor errors where the reader can reasonably be expected to deduce the intended meaning.

### Editing omissions

- 4.21 It is impracticable in many cases to provide verbatim subtitling. Even if it were technically possible for respeakers to produce subtitles in excess of 200 words per

minute, the research suggests that the results would be of little value to most users (see paragraph 3.27 above). Verbatim subtitles would also significantly increase the delay between speech and subtitling. So editing is not just necessary for practical reasons, it is also essential to users. Editing also helps to improve the accuracy of what does appear on screen.

- 4.22 Pre-prepared subtitling is easier to edit, as subtitlers have time to summarise speech without losing the essential meaning. The task is more challenging when producing live subtitles. Research suggests that subtitlers adopt a variety of approaches to editing speech.<sup>38</sup> Editing out redundant speech, such as interjections, repetitions and uncompleted thoughts, can help.<sup>39</sup> But this may not be sufficient in all cases, and there is a risk of sub-optimal editing, including the exclusion of significant content.

## Potential improvements

- 4.23 There is scope for improvement. For example, one subtitling provider hopes to improve the accuracy of voice recognition by enabling a larger combination of phonemes to be compared without increasing the delay in recognition. With growing computing power, and the need for other subtitling providers to compete, there are reasonable prospects that innovation and improvement in voice recognition will continue. But progress is likely to be gradual and incremental, rather than rapid and transformational. For that reason, it may not be particularly apparent to viewers.
- 4.24 Some broadcasters are already seeking to reduce the number of pre-recorded programmes that are not delivered in time for the advance preparation of subtitles. Pre-prepared subtitles are usually of much better quality than live subtitles, so this should improve the viewing experience for hearing-impaired consumers.
- 4.25 As will be seen in paragraph 6.44, a much less common and more controversial approach is the delay of live transmissions for a short period in order that better quality subtitles can be produced.

---

<sup>38</sup> Subtitling TV programmes in real-time - From speaker-independent ASR to live editing, Carlo EUGENI, University of Macerata, Antwerp, October 21, 2011 ([http://www.respeaking-symposium-antwerp.be/images/Subtitling\\_RAI\\_programmes.pdf](http://www.respeaking-symposium-antwerp.be/images/Subtitling_RAI_programmes.pdf))

bbc.co.uk - Online Subtitling Editorial Guidelines V1.1

([http://www.bbc.co.uk/guidelines/futuremedia/accessibility/subtitling\\_guides/online\\_sub\\_editorial\\_guidelines\\_vs1\\_1.pdf](http://www.bbc.co.uk/guidelines/futuremedia/accessibility/subtitling_guides/online_sub_editorial_guidelines_vs1_1.pdf))

<http://www.youtube.com/watch?v=u2K9-JPIPjg>

<sup>39</sup> *Live Subtitling with Speech Recognition – Causes and Consequences of Text Reduction*, Bieke Luyckx, Tijs Debeke, Luuk Van Waes, Marielle Leijten and Aline Renael, , artesis VT Working paper in Translation Studies, (2010)

## Section 5

# How subtitles are distributed and received

## Introduction

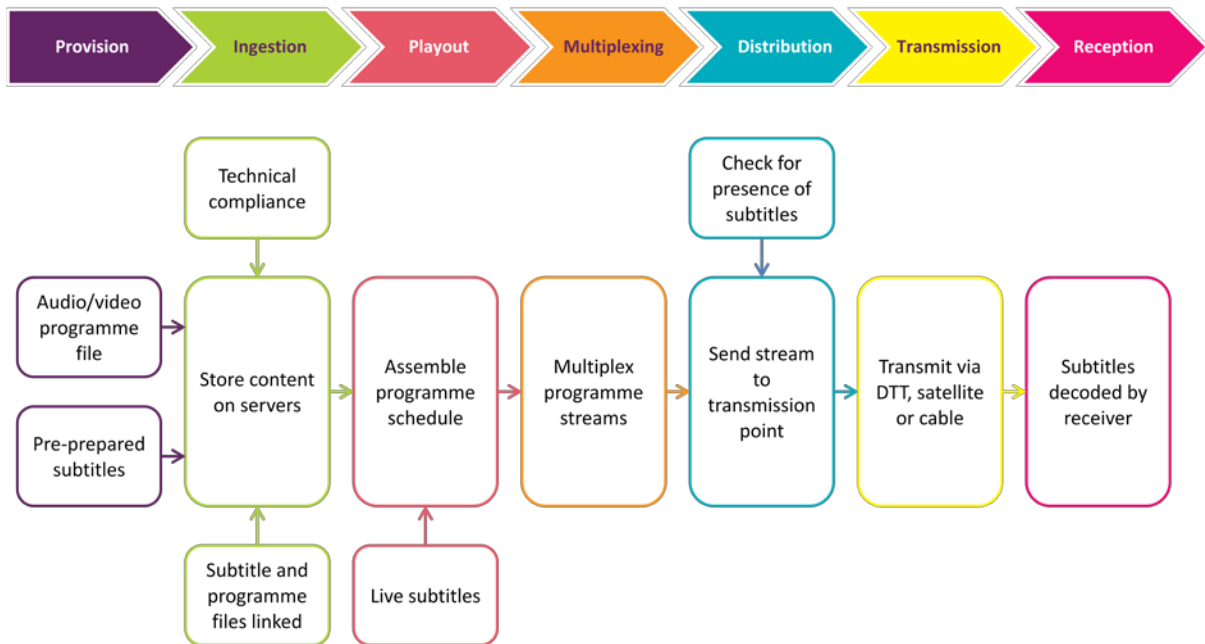
- 5.1 In this section, we describe the transmission chain used to deliver subtitles to the viewer's receiver, and the problems that sometimes arise. In order to make it accessible to a broader audience, the transmission chain is described in a generic and simplified conceptual form.<sup>40</sup>
- 5.2 It will be clear, even from the conceptual diagram of the transmission chain shown in figure 4 below, that the process of getting subtitles to viewers is complex, and has many stages. Four points are worth noting:
- a) for the most part, the transmission process works very well, and even when there are failures, there are alternative routes that can be used to circumvent malfunctioning points in the transmission path;
  - b) the process is highly automated, which has both advantages and disadvantages – it reduces the scope for human error, but can make diagnosing and rectifying problems quickly difficult (though this is mitigated in most cases by the availability of back-ups to the main system);
  - c) in practice, several of the stages shown in the conceptual diagram may be combined, and one operator may be responsible for several stages of the process; and
  - d) the complexity of the process and the many links between different parts of the chain, some of which involve human intervention, mean that failures which affect subtitling can occur. In the context of the hundreds of thousands of programme hours broadcast each year, they are rare, but in absolute terms, not infrequent.

---

<sup>40</sup> Those with an appetite for more detail can begin the exploration process by reading *Media Content Distribution (MCD); Subtitles distribution, situation and perspectives* (ETSI TR 102 989 V1.1.1 (2011-05)) ([http://www.etsi.org/deliver/etsi\\_tr/102900\\_102999/102989/01.01.01\\_60/tr\\_102989v010101p.pdf](http://www.etsi.org/deliver/etsi_tr/102900_102999/102989/01.01.01_60/tr_102989v010101p.pdf))



Figure 4: simplified conceptual diagram of transmission chain



Source: Ofcom

## The transmission chain is complex

### Ingestion

5.3 Once a programme has been produced, it will be provided to the broadcaster in digital file format – a combined file for the video and audio tracks – and a separate file for subtitling, where pre-prepared captions are available. These will be ingested into servers, and linked so that the correct subtitling file is associated with the programme file, and the content is synchronised using time codes. The linked files will be placed in a container format, ready for the payout stage. The process of ingesting the programme content for payout may involve:

- a) combining the audio/video and subtitling files in a container format, comprising streams for video, audio and subtitles, so that it is suitable for the next stage of the transmission;
- b) including control data (metadata) that describes the programme (genre, title etc). In the case of subtitling files, this will include timecodes controlling when subtitles appear on screen and are removed (corresponding to time codes in the audio/video file), and ensuring that they are correctly formatted (e.g. where they should appear and where each line should end, as well as the colour of the subtitles); and
- c) compressing the data so that optimum use is made of the available capacity, and that the data is presented in a format that can be decoded and re-encoded for the following stage of the transmission process. This does not normally result in any compression of the subtitling file, which is already very small.



## Playout

- 5.4 The playout provider, often a specialist company but sometimes the broadcaster, will extract the programme-related files from the server, and compile a programme stream for each channel, in accordance with the programme schedule.
- 5.5 Where live subtitles are required, they will be inserted at this stage by the subtitling provider.

## Multiplexing

- 5.6 In the next part of the process, the programme streams are encoded and multiplexed (combined) to reduce the capacity required to send them to the transmission point. By multiplexing these streams, the broadcaster or operator can take advantage of the varying bit rates required for different programmes (more for a programme featuring lots of movement, such as sporting events, less for studio-based discussion programmes) to smooth out capacity requirements.
- 5.7 A fixed bit rate will be allocated to or reserved for subtitles, which is adequate for most purposes. However, it may not be sufficient to cope with periods during a programme when there are very large amounts of subtitling (see 'Potential Problems' below).
- 5.8 At the end of this stage, a multiplexed programme stream is sent to the transmission provider (often another specialist provider), in the form of a 'transport stream' comprising all the programme streams that are intended for broadcast in the relevant multiplex or equivalent transmission format.

## Transmission

- 5.9 The transmission provider or broadcaster will be responsible for arranging the distribution of the transport stream via a high quality communications circuit (e.g. an optical fibre or communications satellite link) to one of the following:
- a) in the case of digital terrestrial television, the transmitter, from where it will be broadcast to homes and businesses;
  - b) in the case of satellite television, to an earth station, from where the signal can be uplinked to a satellite, and thence downlinked to viewers' domestic satellite dishes; and
  - c) in the case of cable television, the local or national distribution point (known as the 'headend'), and thence by conventional cable or broadband to the home.
- 5.10 It is normal for these circuits to be duplicated, so that if one fails, the transmission provider can switch to the back-up circuit, minimising disruption to viewers. Complete failure is rare, but not unprecedented.

## Reception

- 5.11 The final link in the transmission chain is the receiver – either a television with an integrated digital tuner, or a set top box, which may also act as a PVR (personal video recorder) or DVD recorder. With the completion of digital switchover, all UK viewers now use some form of digital receiver to watch television. This is true regardless of whether the services are delivered by digital terrestrial television (DTT),

satellite or cable. The receiver decodes the digital data that is transmitted, including subtitles if required.

- 5.12 Whereas broadcasters and their suppliers are ultimately responsible for the integrity of the transmission chain from the studio to the transmitter, the final link depends on the digital receiver.<sup>41</sup> While problems can and do occur in other parts of the transmission chain, digital receivers are arguably the most vulnerable part.

## Potential problems

- 5.13 All parties involved in the transmission chain go to considerable lengths to prevent and, if necessary, rectify subtitling problems:
- a) where pre-prepared subtitle files are available, programme schedules are checked, often twice a day, by broadcasters to ensure that the correct subtitle files are associated with the relevant programme files. Subtitle producers have access to the same playout systems and so are also able to perform their own checks;
  - b) for live subtitling, a pre-broadcast check for connectivity is normally carried out between the respeaker and the playout system. This should ensure that the data will be transmitted with the broadcast;
  - c) both broadcasters and subtitle producers monitor live on-screen output and so are able to see problems with transmission as they occur (although it will not always be possible to correct such errors during broadcast even if identified); and
  - d) there are engineering-level quality control systems that monitor whether data is being received and distributed, and highlight omissions.

## Transmission problems

- 5.14 Where problems do occur, these are recorded in transmission logs so that the causes can be identified and corrective action taken to prevent a recurrence. As the following examples taken from broadcasters' logs illustrate, there can be many causes:
- a) changes to software and/or hardware can result in unexpected conflicts that prevent subtitles from being transmitted;
  - b) technical faults may occur with equipment, including the connections between the broadcast studio and the subtitler, or the subtitler and the playout provider;
  - c) pre-recorded subtitles may be linked incorrectly to the video and audio files, resulting in an 'offset' or lack of synchronisation;
  - d) the wrong version of the subtitle file may be transmitted (there can be several different versions depending on how the programme is edited) but fail to go to air, as it does not link properly to the programme;

---

<sup>41</sup> Pay TV providers such as BSkyB, Virgin Media, BT Vision and Talk Talk provide the digital receivers that their customers use, and are therefore responsible for ensuring that they process and display subtitling correctly.

- e) subtitle files may be corrupted, so fail to work;
- f) subtitles may have the wrong timecodes, so fail to playout at the right time;
- g) a server on which the subtitling files are stored may crash;
- h) as a result of human error, the electronic programme guide (EPG) may show that a programme is accompanied by subtitling when in fact it is not; and
- i) the bit rate allocated to subtitles may be insufficient to accommodate peaks in the volume of subtitling for a programme. In this case there may be delays in the subtitling appearing on screen as the data buffers. In rare cases this could result in the subtitling appearing and disappearing very quickly as the television receiver responds to control data instructing it to clear subtitles from the screen at a given point in the programme, so that they can be replaced by the next set of subtitles.

### **Performance problems with receivers**

- 5.15 Receivers are the final and cheapest link in the transmission chain. As with other parts of the transmission chain, they are not primarily designed with subtitling in mind. Industry sources suggest that, whether or not a receiver is capable of delivering the best possible subtitling experience is unlikely to affect sales significantly. In other words, there is little or no commercial advantage in spending money optimising the subtitling output of a receiver.
- 5.16 By comparison with analogue televisions, digital receivers are relatively complex computers – capable of doing much more, but susceptible to the bugs that affect most computers from time to time. A variety of industry sources have told Ofcom that just as new computers are sometimes released on to the market with known (and unknown) bugs in their software, the same is true of television receivers. Known bugs may be risk-assessed in terms of the costs to the business that they will drive (for example, in terms of product recalls and customer support), and prioritised for attention. High priority issues may be resolved through subsequent software patches, while lower priority issues may not be tackled at all.
- 5.17 How, then, can consumers best decide on the receiver most likely to meet their needs for subtitling? Receiver models change frequently, and there is no single source of advice for consumers on which receivers are most suitable for subtitle users. At the time of writing, Ricability's website provided advice on a range of digital receivers, but this has not been updated since 2011.<sup>42</sup>
- 5.18 In the absence of up-to-date consumer advice, it may be thought that buying an expensive receiver, or one that had been tested for subtitling capability, would improve the consumer's chances of getting suitable equipment. Unfortunately, this is not necessarily the case.
- 5.19 For example, the design and testing of expensive receivers may focus upon innovative functions that have commercial appeal, rather than subtitling capabilities that may not drive sales. Changes in manufacturing processes or locations that result in different configurations of components can lead to unforeseen problems.

---

<sup>42</sup> *Digital TV Consumer Test Reports*, Ricability (<http://www.ricability-digitaltv.org.uk/test-reports.htm>)

- 5.20 Many of the receivers in the market are tested to see if they conform with basic specifications, including the ability to render subtitling in the right place with the right colours and at the right time.<sup>43</sup> However, this does not normally involve testing to see how receivers perform under operational conditions.
- 5.21 For example, receivers will periodically or continually receive over-the-air downloads of EPG data or software. Processing this data may, in some circumstances, cause conflicts with subtitling display processes within the receiver, leading to apparently random problems. For example, a digital receiver may be configured to prioritise the processing of incoming EPG updates before dealing with subtitling. If a receiver has been switched on, particularly to the same channel, for a long time, it may in effect be running multiple processes. As a result, the efficiency and effectiveness of the processes – including subtitling – may be prejudiced.
- 5.22 In receivers with less powerful processors, or where processor and memory resources are not allocated in the most efficient manner, a ‘backlog’ of subtitles can build up in the receiver. This can result in a greater than usual delay between speech and the appearance of subtitles, the rapid removal of subtitles once displayed, or the non-display of some or all subtitles. Such problems can become progressively worse if the receiver is switched to the same channel for a long time.
- 5.23 Where receivers are operating incorrectly or close to their performance limits, even identical boxes might react differently to certain situations, depending on how long they have been turned on, the length of time that a channel has been selected, and whether the software has been updated, all of which can influence the way in which the internal computer processes the data it is receiving.
- 5.24 Performance problems may be exacerbated by live subtitling. While pre-prepared subtitles are delivered in regular packets of data, the scrolling nature of live subtitles require more frequent updates and a different allocation of receiver processing resources than the designer may have catered for, so can result in more problems.
- 5.25 In many cases, these problems may be resolved by changing to a different channel, and (if desired) changing back again. If that doesn’t work, it is worth powering down the set top box altogether in order that all the potentially conflicting software processes are stopped. When switched ‘off’, many digital receivers go into standby mode, which may not clear all conflicting software processes. For this reason, it may be better to switch off the power at the wall socket, then wait 10-20 seconds before switching the receiver back on.

---

<sup>43</sup> This includes all receivers carrying the Freeview+, Freeview HD and Freesat trademarks, which are tested by DTG Testing (<http://www.dtgtesting.com/home>). Manufacturers of standard definition Freeview receivers must self-declare whether their receivers conform with relevant standards

## Section 6

# Incentivising better quality subtitles

## Introduction

6.1 Ofcom considers that, in order to see appreciable progress, it will be necessary to seek improvements in several different areas. In this section, we set out proposals for incentivising broadcasters and access service providers to identify and act upon areas for improvement, in several ways.

6.2 First, by requiring broadcasters to measure and report upon:

- a) key dimensions of quality that will make areas for improvement evident, we would hope to encourage them to focus on ways of improving performance to the benefit of viewers who rely upon subtitling; and
- b) the number of pre-recorded programmes that are accepted later than the intended 'delivery date', we would hope that broadcasters will strive to reduce the quantity of pre-recorded programming which has to be transmitted with live subtitling, which is necessarily of lower quality than pre-prepared subtitles.

We would assess the impact of these actions and their effectiveness in the light of experience.

6.3 Second, we will be asking broadcasters to provide information on the causes of technical failures in the provision of subtitling, in order that we can understand whether there are particular aspects of the production or transmission processes that require attention. We believe that it would be in the public interest to encourage broadcasters to be as frank as possible in providing information, and we recognise that as the processes often involve multiple parties, there may be issues of commercial confidentiality. For this reason, we propose to publish the information collected in a form that will preserve that confidentiality.

6.4 Finally, as we explain later in this section, we are also asking respondents, particularly broadcasters, for their views on the scope for delaying the transmission of some 'live' programmes slightly, which subtitling providers say would allow sufficient time to make an appreciable difference to the quality of subtitling provided. We will ask broadcasters to let us have their views on this proposition in a form that can be published.

## Current measures of quality

6.5 In framing the proposed measures, we have looked at the existing methods used by broadcasters and access service providers in the UK, as well as approaches adopted or considered elsewhere. As we explain in this section, we have identified merits and drawbacks in each of these approaches. Within this context we invite views on the proposals set out below.

### Measures used by UK broadcasters

6.6 Major UK broadcasters monitor the adequacy of subtitling provision in a variety of ways:

- a) some broadcasters have adopted quality measures against which their access service providers report, sometimes as a contractual obligation. These measures of quality vary in sophistication, but are often associated with a single accuracy target of, say, 97% to 99%. They are based on a sample of programming, sometimes selected by the access service provider;
  - b) some carry out spot checks of performance on a sample of programming. They have, though, highlighted that such checks are detailed and time-consuming. They are often therefore focused on the most high-profile output, which would be expected to deliver most audience impact;
  - c) broadcasters and access service providers often receive feedback from viewers which they share. Some broadcasters analyse this feedback to understand whether there are common problems or patterns which they and their access service providers can then address; and
  - d) broadcasters normally keep a log of transmission problems, in order to identify and resolve problem areas.
- 6.7 In addition, access service providers periodically review the performance of subtitlers based on a sample of work, through a combination of peer-assessment, manager assessment and self-assessment.
- 6.8 While the combination of these approaches may help to give broadcasters a general appreciation of the adequacy of their subtitle provision, Ofcom considers that they suffer from a number of drawbacks:
- a) quality measures based on the accuracy of on-screen subtitles, rather than the original sound track, do not measure the extent to which important content has been missed out, or misrepresented. Nor do they capture the effects of the speed of subtitling, or latency. Finally, although targets appear high (e.g. 99%), this does not make clear that this would still allow more than one mistake a minute on average;
  - b) some assessments are carried out by access service providers, who may have a contractual obligation to achieve a certain target. The potential conflict of interest is clear;
  - c) some measures mix assessments of both live and pre-prepared subtitling, which makes it difficult to see how either is performing; and
  - d) some measures mix assessments for more than one client, making it difficult for any of the clients to see the quality of the service they are being provided.

### **Measures used outside the UK**

- 6.9 A number of other countries have adopted quality measurement models, or are in the process of putting them in place.
- 6.10 In Spain, Red Bee Media's subsidiary Mundovisión has adopted the so-called Net Error Rate (NER) Model to assess the accuracy of subtitling, which has been

included in the Spanish guidelines on subtitling for the deaf and hard of hearing.<sup>44</sup> The NER model has also been tested and validated by the Italian company Televideo Sottotitoli (RAI), and is used by the Swiss subtitling company Swiss TXT to assess the accuracy of subtitling in German, Italian and French. Moreover, the model will be used as part of the training of respeakers in Bavaria (Germany).<sup>45</sup>

- 6.11 A different approach is used by the Canadian Radio-television and Telecommunications Commission (CRTC), which regulates the quality of both live and pre-recorded subtitling. For live English-language subtitles, broadcasters must reach an accuracy rate of at least 95% averaged across the programme; the corresponding target for French language subtitles is 85%.<sup>46</sup> The accuracy rate is measured by considering the number of words spoken, and then the number of errors (this includes word substitutions, omissions and insertions). Pre-recorded subtitles use the same calculation method, but broadcasters must target an accuracy rate of 100%, including spelling. Alongside these measurements, the timing of subtitles is also monitored. Live English-language programming subtitles must not exceed a six second delay, and subtitles for live French-language programming must not exceed a 5 second delay (both averaged over the duration of the programmes).
- 6.12 In Australia, the Australian Communications and Media Authority (ACMA) is developing new standards for TV subtitling quality, ACMA views quality as the cumulative effect of readability, accuracy and comprehensibility. It is proposed that, for both live and pre-recorded subtitles, broadcasters would have to take account of these factors. Each factor is further broken down in to components. For example, readability includes the use of colour and fonts in ways that make captions legible, standard punctuation, positioning of captions to avoid obscuring important visuals or on-screen text, and captions being no more than three lines long.<sup>47</sup>

## Ofcom's proposed measures

- 6.13 Ofcom notes:
- a) the interesting approaches to measuring the accuracy of subtitling that seek to take account of the varying significance of errors;
  - b) the measurement of the latency of subtitling in Canada;
  - c) ACMA's views that a wide variety of factors contribute to the quality of subtitling.
- 6.14 In section 3, we observed that the key dimensions of the quality of subtitling are speed, latency, accuracy, inaccuracies, presentation and the presence or absence of subtitling as advertised. We set out proposals below for measures in relation to the speed, latency and accuracy of subtitling.
- 6.15 Under the heading 'Other issues for consideration', we set out our thinking on presentation, technical difficulties that result in the absence of subtitling, the late

<sup>44</sup> AENOR is the Spanish Association for Standardization and Certification [check whether the guidelines have been certified – not clear from English website] (<http://www.en.aenor.es/aenor/inicio/home/home.asp>)

<sup>45</sup> Dr Pablo Romero-Fresco (2011) '*Accuracy Rate in Live Subtitling – the NER model*', Roehampton University.

<sup>46</sup> Canadian Radio-television and Telecommunications Commission (2012) *Broadcasting Regulatory Policy* CRTC 2012-362. (<http://www.crtc.gc.ca/eng/archive/2012/2012-362.htm>)

<sup>47</sup> Australian Communications and Media Authority (2013) *Draft Captioning Quality Standard*. ([http://www.acma.gov.au/WEB/STANDARD/pc=PC\\_410407](http://www.acma.gov.au/WEB/STANDARD/pc=PC_410407))

delivery of programmes, and the scope for inserting short delays in the transmission of 'live' programmes, in order to improve the quality of live subtitling.

## Speed of subtitling

- 6.16 Ofcom proposes that broadcasters should be required to measure and report on the average speed of subtitling based on a number of short samples of programmes recorded off-air every six months that Ofcom would select from news and other programmes. Broadcasters would be required to make available recordings of these segments to Ofcom in order that spot checks could be carried out.
- 6.17 One broadcaster suggested that it would be helpful to distinguish between different types of programmes, for which different speeds might be appropriate or necessary, such as news programmes, discussion-based current affairs programmes (e.g. Question Time), and entertainment programmes.
- 6.18 Our initial view is that it may indeed be helpful to distinguish between the speed of subtitling in news programmes and others, both because of the relative importance of news programming, and because it often contains a significant element of pre-scripted speech by the newscasters, as well as pre-prepared segments, which is very different from, say, a magazine programme. This often enables block subtitles to be prepared in advance (e.g. for correspondents' reports) which may make it easier to read at faster speeds.
- 6.19 On grounds of proportionality, we see merit in limiting the sampling to two or three categories of programme, at least initially. These could include live news programmes taken from the same part of the schedule (e.g. evening news bulletins), chat shows, and entertainment programmes.
- Q1. Do consultees agree with the proposal to require broadcasters to measure and report every six months on the average speed of live subtitling in a variety of programmes, based on a sample of segments selected by Ofcom?*
- Q2. Do consultees consider that broadcasters should be asked to report separately on different types of live programming? If so, do they agree with the suggestions in paragraph 6.19, or would they suggest different categorisations, and if so, why?*
- 6.20 At this stage, we do not think that it would be appropriate to set a maximum target for the speed of subtitling, as there may be a limited number of situations when higher speeds would be appropriate, even at the cost of a loss of comprehensibility for some hearing-impaired viewers.
- 6.21 However, we would welcome views on this, and on whether it would be appropriate to review the guidance in Annex 4 to the Code on Television Access Services<sup>48</sup>, which suggests that subtitling speeds 'should not normally exceed 160 to 180 words per minutes for pre-recorded programmes' and that, for live programmes, commissioning editors and producers should be aware that 'dialogue which would require subtitles faster than 200 wpm would be difficult for many viewers to follow'.

---

<sup>48</sup> Ofcom (2012) *Ofcom's Code on Television Access Services*. (<http://stakeholders.ofcom.org.uk/broadcasting/broadcast-codes/tv-access-services/code-tv-access-services-2013/>)



*Q3. Do consultees consider that the guidance on subtitling speeds should be reviewed? Do consultees agree that, for the time being, it would not be appropriate to set a maximum target for the speed of live subtitling? If not, please explain why.*

## Latency

- 6.22 Ofcom proposes that broadcasters should be required to measure both the average latency of subtitling and the range of latencies, based on a number of short samples of programmes recorded off-air that we would select from news and other programmes.
- 6.23 For the same reasons as outlined above in relation to subtitling speed, Ofcom’s initial view is that it would be helpful to distinguish between the speed of subtitling in news programmes and other programmes, though we would welcome views on this.
- 6.24 At this stage, we do not think that it would be appropriate to consider possible targets for latency, as we need to find out more about what is actually possible. In the light of the information obtained from broadcasters, it may be appropriate to review the guidance in Annex 4 to the Code on Television Access Services<sup>49</sup>, which suggests that ‘the aim should be to keep the inevitable delay in subtitle presentation to the minimum (no more than 3 seconds) consistent with accurate presentation of what is being said’.

*Q4. Do consultees agree that it would not be appropriate at this stage to set a maximum target for latency? If not, please explain why.*

## Accuracy

- 6.25 In routine assessments of the performance of individual subtitlers, access service providers often include measures of all inaccuracies resulting from misspelt words, garbled language, incorrect words and names (including place names), and more serious errors. These may include misattributed quotations, omissions of words such as ‘not’ and ‘no’ which reversed meanings (e.g. not guilty), wrong conclusions, false but credible names of people and places, and false but credible facts and figures (e.g. ‘million’ instead of ‘billion’).
- 6.26 We propose that broadcasters should be asked to report upon both gross error rates and the number of more serious errors to be found in excerpts selected by Ofcom from a range of programmes.

*Q5. Do consultees agree with the proposal to require broadcasters to measure and report every six months on error rates, on the basis of excerpts selected by Ofcom from a range of programmes?*

## Other issues for consideration

- 6.27 Not all aspects of quality lend themselves to measurement, but there are other steps that might help to improve the quality of subtitling. We set out some issues for consideration below.

---

<sup>49</sup> *ibid.*

## Presentation

- 6.28 Ofcom notes that viewers find it easier to read subtitling that is presented in blocks rather than in scrolling form. Access service providers have told us that both approaches are possible, though it is likely that the delay would be increased if subtitles had to be prepared in blocks before being released for transmission.
- 6.29 We would be interested to hear the views of subtitle users on whether they, for programmes subtitled live, they would prefer scrolling subtitles that reach the screen more quickly than block subtitles, that may be easier to read. To facilitate this, Ofcom asked the two main access service providers – Red Bee Media and De Luxe (formerly ITFC) to prepare examples of both approaches, which they have kindly done. These can be found on Vimeo at <http://vimeo.com/ofcom>. We would welcome feedback from viewers about the different approaches, which they prefer, and why. We will consider this carefully in deciding whether or not to make changes to our guidance.

*Q6. Do consultees have any views on the advantages and disadvantages of scrolling versus block subtitles for live-subtitled programmes? Taking account of both the advantages and disadvantages, which approach would consultees prefer, and why?*

## Late delivery of programmes

- 6.30 A few programmes have topical content and cannot be produced until shortly before transmission. A joint protocol agreed between the public service broadcasters sets out the required delivery dates for ‘week topical’ programmes (five days before transmission), ‘day before topical programmes’ (24 hours before transmission) and ‘on the day topical programmes’ (2 hours before transmission).<sup>50</sup> Once delivered, all such programmes then have to go through a technical review, to make sure that they comply with necessary broadcast standards.
- 6.31 Clearly, in the case of ‘on the day topical programmes’, the production of pre-prepared subtitles would be very difficult, though it is not unprecedented. Given the relatively short lead times quoted to us by access service providers, we see no reason why ‘week topical’ and day before topical programmes’ should require live subtitling.

**Figure 5: extract from BBC guidance for producers**

Topicality Status	Programme Types	Delivering to:
<b>Week Topical Programmes</b>	<ul style="list-style-type: none"> <li>- a programme with 'week specific' elements within its content</li> <li>- people of the week chat shows</li> </ul>	A specified date <b>5 days</b> before transmission
<b>Day Before Topical Programmes</b>	<ul style="list-style-type: none"> <li>- a programme with a 'news' element within it</li> <li>- weekly review</li> </ul>	A specified date and time <b>up to 24 hours</b> before transmission

<sup>50</sup> *Production Delivery – Transmission Essentials*, BBC (<http://www.bbc.co.uk/commissioning/tv/production/delivery/what-where-when-and-who.shtml>)

	programmes - spin-offs linked to live shows	
<b>On Day Topical Programmes</b>	- a news programme (but not other factual documentary series unless another criterion is met) - highlights programmes connected to earlier sport or other live event	A specified date and time <b>up to 2 hours</b> before transmission

6.32 Despite this, Ofcom understands that, notwithstanding contractual obligations requiring producers to deliver most topical programming in good time for the preparation of pre-recorded subtitling, it is not unusual for these dates to be missed, necessitating the preparation of live subtitles. These are necessarily of lower quality, particularly in the case of topical panel programmes that feature overlapping banter between presenters and panellists. We also understand that it is rare for contract compliance action to be taken in the case of late delivery.

6.33 Reasons for late availability cited by broadcasters include:

- a) the need to ensure that content (particularly in the case of topical programmes on controversial issues) is, where necessary, edited to avoid legal repercussions;
- b) the desire on the part of both commissioners and producers to ensure that topical entertainment programming is as up to date as possible; and
- c) the desire on the part of producers to fine-tune aspects of the programme to improve the final result.

6.34 We were told by access service providers that, in some cases, they would seek to provide a late-delivered programme with pre-recorded subtitles, for example, by breaking down the programme into segments that can be tackled by several subtitlers simultaneously. However, this is expensive, and the additional costs may not be remunerated by the broadcaster.

6.35 On occasion, even when programmes are delivered late, there may be time for access service providers to prepare subtitling in advance, but not enough time for a time-coded subtitle file to be prepared for broadcast alongside the sound and pictures. In this case, the subtitler will monitor the programme, and 'cue' (or transmit) the subtitles manually at the appropriate time. While this may not result in the same quality of editing that it is possible when there are not the same time pressures, it does allow for subtitles to be prepared in blocks (which is easier to read) and better synchronised with speech.

6.36 In discussion with broadcasters, it became clear that some of them were looking at how the number of late delivered programmes could be reduced. We welcome this. While the number of late-delivered programmes may be small, they are often amongst the most popular. The effect of decisions not to make pre-recorded subtitling possible (e.g. by permitting or tolerating late delivery of programmes) is that the final result for hearing-impaired viewers is worse.

- 6.37 As editorial control for programming rests with the broadcaster, Ofcom does not currently consider that it would be appropriate to require that pre-recorded subtitles be produced for pre-recorded programming. Nonetheless, there may be a case for Ofcom providing guidance in relation to such cases on how broadcasters 'should promote the understanding and enjoyment by ... persons who are deaf or hard of hearing ... of the programmes included in [their] services' - for example, requiring broadcasters to take account of the impact upon people with hearing impairments of accepting the late delivery of programmes in cases where this would result in live subtitling.
- 6.38 To help us understand whether guidance would be warranted in this area, Ofcom considers that it should gather information on the scale and circumstances of cases involving programmes that are delivered late and subtitled live. Accordingly, we shall ask the major broadcasters (BBC, ITV, Channel 4, Channel 5 and Sky) to provide a report by 15 January 2014, covering the period from 1 July 2013 to 31 December 2013, on:
- a) the number of programmes delivered to the broadcaster after the time and date stipulated in the contract, where live subtitling was necessary; and
  - b) the circumstances which led to late delivery.
- 6.39 We shall consider in the light of those reports whether further information may be required, and whether further action would be warranted.

### **Technical and other issues**

- 6.40 It is clear to Ofcom that there are technical and other issues that lead to the loss of or interruption of subtitling, for a variety of different reasons. In order that we can understand whether there are particular aspects of the production or transmission processes that require attention, we propose to ask broadcasters to provide information on the incidence, severity and causes of failures in the provision of subtitling.
- 6.41 We believe that it would be in the public interest to encourage broadcasters to be as frank as possible in providing information, and we recognise that, as the processes often involve multiple parties, there may be issues of commercial confidentiality. For this reason, we propose to publish the information collected in a form that will preserve that confidentiality.

### **Scope for delaying live transmissions to improve subtitle quality**

- 6.42 Broadcasters and access service providers recognise the frustration caused by the delay between speech and subtitling. Before digital switchover, they were able to make use of the slight delay between the analogue and digital signals to begin preparing the digital subtitles slightly ahead of time. With the end of analogue broadcasting last year, access service providers tend to use a live studio feed, which bypasses the normal distribution system, and arrives slightly before the off-air signal. But the gap is very short, so doesn't allow for much advance preparation.
- 6.43 UK broadcasters do delay live transmissions from time to time, in order to allow offensive language to be 'bleeped' out before it goes to air, so that viewers can be

protected from inappropriate content, particularly before the watershed.<sup>51</sup> For example, there is a delay of up to a minute in ‘live’ transmissions of *Big Brother*.

- 6.44 In this context, Ofcom notes that a Dutch broadcaster decided to delay the broadcast of ‘live’ programmes by about 20 seconds in order to give subtitlers the opportunity to prepare materially better subtitling than would otherwise be possible.<sup>52</sup> Access service providers have suggested that a delay of 15-20 seconds could help to improve the quality of subtitling – for example, by allowing for better edited subtitles to be prepared and presented in blocks, making them easier to read and comprehend. Clearly, the longer the delay, the more aspects of quality could be addressed; the shorter the delay, the more choices would have to be made between different dimensions of quality – for instance, would viewers benefit more from more closely synchronised subtitles than better edited subtitles, or subtitles presented in a more readable form?
- 6.45 While Ofcom recognises that delays to live transmissions could have repercussions for the editorial process, we would welcome the views of interested parties, and from broadcasters in particular, on the pros and cons of this idea.

*Q7. What are the factors that might facilitate or hinder the insertion of a delay in live transmissions sufficient to improve the quality of subtitling? Ofcom would particularly welcome the views of broadcasters on this question.*

---

<sup>51</sup> See, for example, the report from *Broadcast Now* (<http://www.broadcastnow.co.uk/a-bleeping-success/1094607.article>)

<sup>52</sup> *Live inter-lingual subtitling in the Netherlands – Historical background and current practice*, Thijs de Korte, NOB Cross Media Facilities (NL), 2006) ([http://www.intralinea.org/specials/article/Live\\_inter-lingual\\_subtitling\\_in\\_the\\_Netherlands](http://www.intralinea.org/specials/article/Live_inter-lingual_subtitling_in_the_Netherlands))

## 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 26 July 2013**. It would be helpful if your response could include direct answers to the questions asked in this document, which are listed 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 consultees agree with the proposal to require broadcasters to measure and report every six months on the average speed of live subtitling in a variety of programmes, based on a sample of segments selected by Ofcom?*

*Q2. Do consultees consider that broadcasters should be asked to report separately on different types of live programming? If so, do they agree with the suggestions in paragraph 6.19, or would they suggest different categorisations, and if so, why?*

*Q3. Do consultees consider that the guidance on subtitling speeds should be reviewed? Do consultees agree that, for the time being, it would not be appropriate to set a maximum target for the speed of live subtitling? If not, please explain why.*

*Q4. Do consultees agree that it would not be appropriate at this stage to set a maximum target for latency? If not, please explain why.*

*Q5. Do consultees agree with the proposal to require broadcasters to measure and report every six months on error rates, on the basis of excerpts selected by Ofcom from a range of programmes?*

*Q6. Do consultees have any views on the advantages and disadvantages of scrolling versus block subtitles for live-subtitled programmes? Taking account of both the advantages and disadvantages, which approach would consultees prefer, and why?*

*Q7. What are the factors that might facilitate or hinder the insertion of a delay in live transmissions sufficient to improve the quality of subtitling? Ofcom would particularly welcome the views of broadcasters on this question.*

- A1.2 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Rowan Armstrong on 020 7981 3621.

## How to respond

- A1.3 We strongly prefer to receive responses via the online web form which incorporates the coversheet shown at the end of this Annex. 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/](http://www.ofcom.org.uk/consult/).

- A1.4 We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality where appropriate.
- A1.5 For larger consultation responses - particularly those with supporting charts, tables or other data - please email [rowan.armstrong@ofcom.org.uk](mailto:rowan.armstrong@ofcom.org.uk) attaching your response in Microsoft Word format, together with the coversheet.
- A1.6 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.
- A1.7 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.
- Rowan Armstrong  
5<sup>th</sup> Floor  
Riverside House  
2A Southwark Bridge Road  
London SE1 9HA
- Fax: 020 7981 3806
- A1.8 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.
- A1.9 Note that 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

- A1.10 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](http://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.
- A1.11 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.
- A1.12 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

- A1.13 Following the end of the consultation period, Ofcom intends to publish a statement in late 2013 or early 2014. 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](http://www.ofcom.org.uk/static/subscribe/select_list.htm)

## Ofcom's consultation process

- A1.14 Ofcom has published the following seven principles that it will follow for each public written consultation:

### Before the consultation

- A1.15 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

- A1.16 We will be clear about who we are consulting, why, on what questions and for how long.
- A1.17 We will make the consultation 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 consultation 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.
- A1.18 We will consult for up to 10 weeks depending on the potential impact of our proposals.
- A1.19 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 our consultations.
- A1.20 If we are not able to follow one of these principles, we will explain why.

### After the consultation

- A1.21 We think it is important for everyone interested in an issue to see the views of others during a consultation. 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.
- A1.22 Ofcom seeks to ensure that responding to a consultation is easy as possible. If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at



[consult@ofcom.org.uk](mailto: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.

- A1.23 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](mailto:Graham.Howell@ofcom.org.uk)

## Consultation response cover sheet

### 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

Name/contact details/job title

Whole response

Organisation

Part of the response

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)