Audio Description in the UK: what works, what doesn't and understanding the need for personalising access.

Abstract

Audio Description for film and television is a pre-recorded track that uses verbal descriptions to provide information on visual aspects of a film or TV programme. In the UK it is currently the only accessibility strategy available for visually impaired audiences and although it provides access to a large number of people, its shortcomings also fail to engage others in audiovisual experiences. The Enhancing Audio Description project explores how digital audio technologies can be applied to the creation of alternatives to Audio Description with the aim of personalising access strategies. Such personalisation would allow users to select the method utilised to access audiovisual experiences, by having choices that include traditional forms of accessibility as well as sound design based methods. The present article analyses the results of a survey and focus groups in which visually impaired participants discussed the advantages and disadvantages of AD and it demonstrates not only the diversity of experiences and needs of visually impaired groups but also their eagerness for change.

1. INTRODUCTION

Questions on accessibility are crucial as sight loss affects approximately 2 million people in the UK and estimations indicate that this number will increase to 4 million by 2050 (Bosanquet and Meht 2008). Significantly, 87% of visually impaired people access audiovisual entertainment such as film and television on a regular basis (Douglas, Corcoran and Pavey 2006). Currently, the only existing accessibility system for visually impaired people wanting to watch film and television is Audio Description (AD), which is a pre-recorded audio commentary that provides information that clarifies the narrative, such as descriptions of actions, gestures and places.

This paper discusses the results of a survey and focus groups conducted in the context of the Enhancing Audio Description project, in order to determine design strategies that could be implemented for the creation of an alternative to AD, which some users might prefer over traditional methods and whose purpose is to tackle aspects of AD identified by users as problematic.

2. AUDIO DESCRIPTION FOR VISUALLY IMPAIRED FILM AND TV AUDIENCES

In 2003 in the UK the Communications Act dictated that broadcasters had to ensure 10% of their programming had AD, with the BBC, Channel 4, ITV and Sky committed to including AD in at least 20% of their content (Rai 2011). During the same year, the provision of AD in the UK was increased with the funding provided by the UK Film Council to 78 cinemas in England, (Greening and Rolph 2007) and nowadays 40% of the cinemas in the country include AD services (Rai 2011). For home entertainment, around 500 DVD/Blu-ray titles include an AD track (World Blind Union 2011). The Authority for Television On Demand (ATVOD) and the Office of Communications (Ofcom) reports indicate the increase in the amount of audio description on both, broadcast services and on-demand programme services (ODPS), however progress of ODPS is lagging behind (Ofcom 2017). The Royal National Institute of Blind People

(RNIB) in partnership with MovieReading have developed and trialed a mobile application designed to overcome some of these limitations. Through this app users can download their required AD track and play it while watching the media content in question. The app then synchronises the AD track to the original soundtrack, allowing users to access the audio described version of the film (Rai 2015).

The main strength of AD is its potential to allow visually impaired audiences to construct a story that is alike the one experienced by sighted people (Remael 2012). AD users find TV programmes more interesting, informative and enjoyable, while also experiencing an increase in confidence and self-esteem as they can discuss TV programmes without fear of having misinterpreted the narrative or without the need of a sighted friend to describe the content (Schmeidler and Kirchner 2011).

Despite the advantages of AD, the system does have some inherent problems. The main shortcoming is the fact that it is an accessibility measure outside the creative process involved in a film or TV production (Whitfield and Fels 2013). As a result, although the describer is meant to provide information in an objective manner (ITC 2000), what s/he provides is her/his own interpretation of a particular piece (Udo and Fels 2010). AD is not overseen by the director of the production (Udo and Fels 2010), and as a result does not necessarily express the artistic vision of the piece (Whitfield and Fels 2013). A further disadvantage of traditional AD practices is the focus on providing an experience that is as equally informative as the one offered to sighted audiences, but not necessarily equally entertaining (Udo and Fels 2010). Furthermore, users of AD often complain about lack of intelligibility related to loudness, the complexity of the soundtrack and the audio mix (Remael 2012). Last but not least, AD follows a 'one fits all' model that disregards current research on its success being affected by expectations, needs and experience (ITC 2000).

It is worth noting that recent research in the field of accessibility has focused on analysing the effectiveness of forms of description that embrace subjectivity. Szarkowska (2013) investigated the use of such methods in the context of *auteur* films, in particular in relation to the work of Pedro Almodóvar. Szarkowska created a format called '*auteur* description' which seeks to incorporate the unique marks of a director's work to the description process by using the script of the film, interviews with the director and film reviews.

Similarly, Walczak and Fryer (2017) investigated the effectiveness of *Creative Audio Description* (CRD), which incorporates filmic language and subjective information on characters, actions and scenes. They demonstrated that when applied to naturalistic drama the use of CRD had an impact on the emotional reception of a film, creating a greater sense of immersion, when compared to the traditional AD.

Furthermore, Branson (2017) has been conducting practice-based research on the creation of AD scripts that are the product of a collaboration between filmmakers and accessibility experts, with the intention of bridging the gap between the two and creating an end product that is more appealing to visually impaired audiences.

As will be seen in the section below, research in other fields linked to accessibility has also demonstrated the potential of applying techniques based on sound design strategies to provide access for visually impaired audiences.

3. SOUND DESIGN AND ACCESSIBILITY

AD guidelines have failed to acknowledge how advancements in digital audio production and reproduction could be game-changers in the process of conveying information as well as providing an entertaining experience to visually impaired audiences. The film and TV industries have also been slow in embracing the potential of sound design to foster inclusivity as well as provide new creative challenges. This section discusses creative practices in the fields of audio films and audio games which are applied with the aim of embracing inclusivity. Such innovations are studied in order to shed light on how they could be applied to accessibility in film and television.

3.1 Audio Films

Previous research explored the design of Audio Films, a format of sonic art that eliminates the need for visual elements and a describer, by providing information through sound, sound processing and spatialisation (Lopez and Pauletto 2009 and 2010; Lopez 2015). Sound effects are used both to represent actions and as soundmarks to help the listeners identify the different spaces in the narrative (Schafer 1994). Artificial reverberation (that is, the simulation of the acoustics of a space) is employed to provide each space with a characteristic sound while spatial audio (6.1 surround sound) is used to suggest the layout of the spaces as well as indicate the movement of the characters. A pilot study with visually impaired volunteers has demonstrated the viability of this format as well as the need for further research (Lopez 2015).

3.2 Audio Games

The field of electronic Audio Games, that is, games in which audio is the main way of communication and entertainment, is at the forefront of developments in the use of sound design for accessibility, while also incorporating notions of inclusivity from the start of the design process. These audio games fuse together narration (either through voice over, dialogues, or a combination of both), real and abstract-sound effects as well as diegetic and non-diegetic sounds. Atmos tracks are used to indicate geographical locations and music is used to set the tone of each game. Furthermore, binaural audio, which is used extensively in Audio Games (Drossos *et al* 2015), helps the player locate objects relying on her/his hearing. Binaural audio refers to the use of novel signal processing algorithms to deliver the correct auditory cues to the ears via headphones such that the cognitive processes for sound localisation are tricked into thinking that the sound is localised outside of the head and at an accurate position in 3-D space (Kearney *et al* 2009; Kearney 2016; Masterson *et al* 2012). Audio games, also use volume automation, that is real-time changes in audio levels to give a sense of the distance of the playable character to an object or person. Audio Games also use reverb to indicate a change in the environment as well as auditory/sonic displays, which are recognisable sounds that give information to the user (Drossos *et al* 2015).

4. The Enhancing Audio Description Project

Enhancing Audio Description is a research project funded by the UK Arts and Humanities Research Council (AHRC), which explores the use of digital technologies to transform the design and implementation of AD for film and television and as a result, change the ways in which visually impaired audiences experience audiovisual presentations. The project investigates ways in which AD can be updated through digital technologies to provide both an informative and entertaining experience. Moreover, by incorporating issues of accessibility into film and television workflows the aim is to provide an audio track that is closer to the artist's vision and can be shared by audiences regardless of their sight condition. At the centre of Enhancing Audio Description is the belief that disabilities should not limit the options on how to experience audiovisual media and that the diversity of preferences by visually impaired people cannot be reduced to one accessibility method, but on the contrary requires a user-centred personalised method that allows audiences to make choices on access strategies.

4.1 User-Centered Design

The first stage of the project was focused on collecting data on the present and future of AD through a survey completed by 127 people with sight loss (49% blind, 27% blind with residual vision and 24% partially sighted; 47% of participants indicated congenital sight loss and 54% acquired sight loss – it was the participants themselves that ascertained their sight loss). The comparison of our sample population to the data held by RNIB in relation to registrations of sight loss in England demonstrated that 49% of blind participants is representative of the 48% of blind registrations for England. In relation to age groups it was found that the 65+ group is under-represented in our sample when compared to the national data. However, we do not consider this difference problematic for our survey as our aim was to collect data from a variety

of age groups (see Table 1) in order to determine how new technologies might appeal to different groups. Visually impaired volunteers were invited to participate through gatekeepers in the form of charities that included RNIB, Cam Sight and the York Blind and Partially Sighted Society, among many others. In addition to this we also recruited participants through social media as well as through our attendance to the Dialogue Beyond Sight Exhibition (London, 2016) and through news items in Talking Newspapers. The survey was available online, over the phone and as a hard copy in order to accommodate as many people with different access to technology as possible. Data was collected from May to August 2016.

The survey included questions on *Access to AD at Home*; *Access to AD at the Cinema; User Experience*; *User Preference* and *The Future of AD*. With the aim of comparing the film and television habits of visually impaired people with those of sighted people, a parallel survey was conducted in February 2017 with 109 sighted volunteers. All of those surveys were conducted online and distributed through social media and mailing lists. In our data analysis we considered that results were significant in relation to a p value of 0.05. Results were analysed using a combination of descriptive statistics together with Binomial and Chi-Square tests.

Table 1 – Percentage of survey participants per age group

Sight Condition	**AGE GROUP**					
	15-24	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
Visually Impaired	6%	13%	19%	15%	25%	22%
Sighted	30%	24%	19%	18%	6%	2%

4.1.1 Access to Audio Description at Home

Use of AD at home was reported by 78% of visually impaired participants. When comparing across age groups the data demonstrated that the choice of 'Yes' was significantly higher for all groups from 35-65+ when compared to the group of under 24s (see Table 2). When comparing responses across the groups depending on the type of sight loss (partially sighted, blind with residual vision and blind) (see Table 3) we found that 'Yes' responses for the residual vision and blind groups were significantly higher than for the group with partial sight, indicating that the greater the sight loss, the greater the need for AD services. Following that trend, the blind participants' responses for 'Yes' were also significantly higher than those from the group with residual vision. The majority of participants watch 2-8 hours of Audio Described television and 1-8 hours of non-described TV on average in a week. Responses indicated that this is dependent on the number of film and TV items that include AD as well as the ease or difficulty in activating the accessibility features.

Table 2 – AD use at home in relation to age

Use of AD at Home	**Percentage of Visually Impaired Participants**					
	<24	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
Yes	3.15	10.24	14.96	12.60	18.11	18.90
No	2.36	1.57	3.940	0.79	4.72	1.57
Other	0	1.57	0	1.57	2.36	1.57

Table 3 – AD use at home in relation to type of sight loss

Use of AD	Percentage of Visually Impaired Participants		
	Partially Sighted	Blind with Residual Vision	Blind
Yes	10.24	22.83	44.88
No	12.6	0	2.36
Other	1.6	3.94	1.57

The most popular way of accessing film and television at home for visually impaired participants was identified as Freeview (43%, see Table 4). Responses under the 'Other' category include a combination of the different options given as well as mentioning Virgin Media, cable in general, YouTube, Internet, BT Vision and Apple TV. The comparison of viewing habits between the visually impaired and the sighted groups demonstrated that the choices of Freeview, Satellite and Other were significantly higher for the visually impaired participants, whereas the choice of on-demand was significantly higher for sighted participants. A highlighted issue for not using on demand services was due to accessibility issues, such as problems accessing menus and difficulty navigating websites. There seems to be a desire to use these services but lack of information on how to use them as well as problems accessing them. Furthermore, data also demonstrated that among visually impaired audiences, younger age groups tended to consume on-demand programmes more often.

Access problems for on-demand services could be due to the fact that the most accessible platform is a browser run on a computer, which is not ideal as most users would prefer 'living room' platforms for ease-of-use (Ofcom 2016). ATVOD (Authority for Television on Demand)/Ofcom identified only 6% of ODPS (On-demand programme service) providers as including AD (Ofcom 2016). It is important to catch up with access services on ODPS as they are becoming more and more popular and therefore play an important role in enabling inclusion and participation in cultural and social life. The 2015 ATVOD report highlights that certain programmes when broadcast live have AD, but not when accessed on ODPS. The reason for ODPS being less accessible than live programmes on TV channels is complex. Firstly, ODPS are not regulated in the same way as broadcast channels. Broadcast channels must provide a certain proportion of their programmes with AD, however there are no current statutory obligations in this respect on ODPS. This means that Ofcom can only encourage development. Secondly, there is no standardised technology for ODPS (Ofcom 2015). Many times the access material provided by content providers (e.g. Channel 4, Discovery, ITV, BBC) needs to be edited, converted into different formats to be implementable by the platform operators (e.g. Virgin, Sky, Youview, game consoles). Unfortunately, there is poor communication between the content providers and the platform operators. Some platform operators commented on having technology available for access services but not receiving access material from the content providers, whereas the content providers believe platform operators are not interested in receiving the content in different formats.

Table 4 – Film and TV access at home

Access	Percentage of Participants	
	VI	Sighted
Freeview	43.31	20.2
DVDs/Blu-Rays	2.36	6.4
On-demand	14.96	54.1
Satellite	22.05	11.9
Other	17.32	7.3

The most popular form of on-demand service with visually impaired people was BBC iPlayer as this choice was significantly higher than all the other options provided (see Table 5 and Figure 1). The popularity of BBC iPlayer might be due to its longer history (Hassell 2009). Other services mentioned included Virgin media catch-up, ITV Hub, YouTube, Five on Demand and iTunes. When comparing use of different on demand services between groups of visually impaired and sighted participants we found significant differences in relation to the use of Amazon Prime, Netflix and Other. In relation to Amazon Prime and Netflix its use was significantly higher for sighted participants than visually impaired, whether the Other category was significantly higher for the group of visually impaired volunteers. When comparing within age groups of visually impaired participants significant differences were only found in relation to the use of 4oD. The use of 4oD was significantly higher in the 35-44 and 55-64 age groups when compared to the <24.

Table 5 – Comparison of use of different on-demand providers

AD Provider	Percentage of Responses Visually Impaired Participants	Percentage of Responses Sighted Participants
Amazon Prime	5	16.1
BBC iPlayer	31.6	25.2
Channel4oD	16.2	14.4
Mubi	0.4	1.3
Netflix	14.2	25.6
NowTV	2.4	4.9
Sky	7.5	7.9
Other	13.8	4.6
None	8.3	--

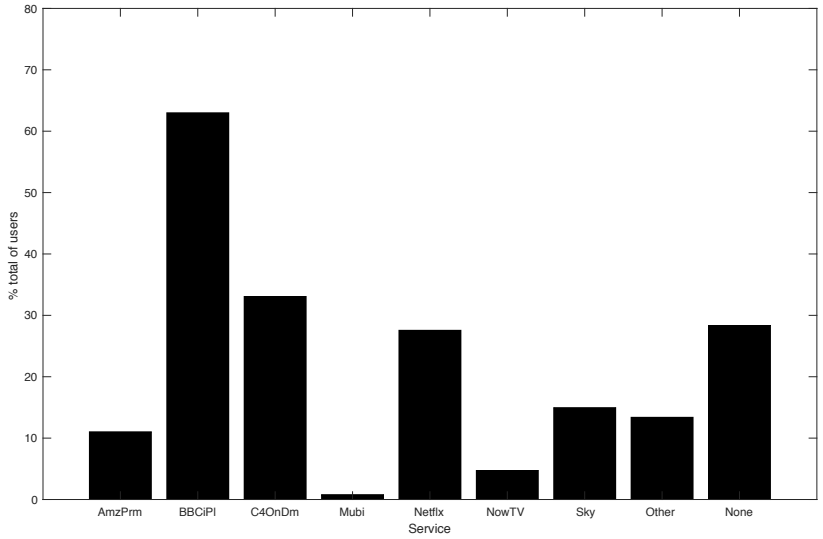

Figure 1 – Use of on-demand providers by visually impaired survey participants

It is interesting to point out that there are no significant differences between the responses for 'Yes' (37.01%) and 'No' (29.92%) regarding the use of AD in on demand services, indicating that its use is divided. Reasons for not using it included the limited availability and the difficulty in accessing it due to overly complicated interfaces. When analysing data across age groups only the N/A category had significant differences among age groups, and it was the '65+' age group that had responses for this category that were significantly higher than those for the <24-34 age group. The group of blind volunteers' responses for 'Yes' were significantly higher than the responses for the other sight loss groups.

The survey responses indicated limited use of DVD/Blu-rays by both sighted and visually impaired participants, indicating that the limited use might have more to do with habits than with accessibility. Regarding the use of AD on DVDs/Blu-rays responses for 'Yes' (48.82%) weren't significantly higher than responses for 'No' (37.8%). When asked about the use of AD on DVDs/Blu-rays, we came across the same challenges mentioned in relation to on-demand services: the fact that the digital menu to access the AD track is not accessible and such difficulty hinders independence.

When it came to listening habits at home, both visually impaired and sighted groups had in common that the use of speakers included in the television was significantly higher than the other choices, which might be the reason for some of the known issues with speech intelligibility (Mapp 2016). When analysing listening habits at home between visually impaired and sighted participants we found no significant differences between the groups. Under 'Others' the visually impaired participants mentioned speakers on mobile devices and external

speakers attached to a computer. Sighted participants mentioned 5.1 surround sound system; soundbar; iPad or IMac internal speakers, laptop speakers and Google home smart voice assistant.

Table 6 – Comparison of listening habits between visually impaired and sighted people

Listening Habits at Home	Percentage of Responses Visually Impaired Participants	Percentage of Responses Sighted Participants
Headphones	13	12.8
Speakers included with the television	62	60.6
External speakers	20	21.1
Other	5	5.5

Table 7 – Comparison of listening habits in relation to age groups

Listening Habits at Home	Percentage of Responses Visually Impaired Participants					
	<24	25-34	35-44	45-54	55-64	65+
Headphones	2.36	1.57	4.72	2.36	1.57	0
Speakers included with the TV	2.36	5.51	11.81	10.24	14.96	17.32
External Speakers	0.79	5.51	1.57	2.36	6.3	3.94
Other	0	0.79	0.79	0	2.36	0.79

When comparing across age groups of visually impaired participants there was only a significant difference in relation to the use of TV speakers, in which the use by the <24 group was significantly lower than the groups between 35 and 65+, and the choice was significantly lower for the 25-34 group when compared to the groups between 55-65+. Blind participants reported significantly higher use of external speakers than partially sighted participants, which could be due to a greater reliance on the audio channel of audiovisual programmes.

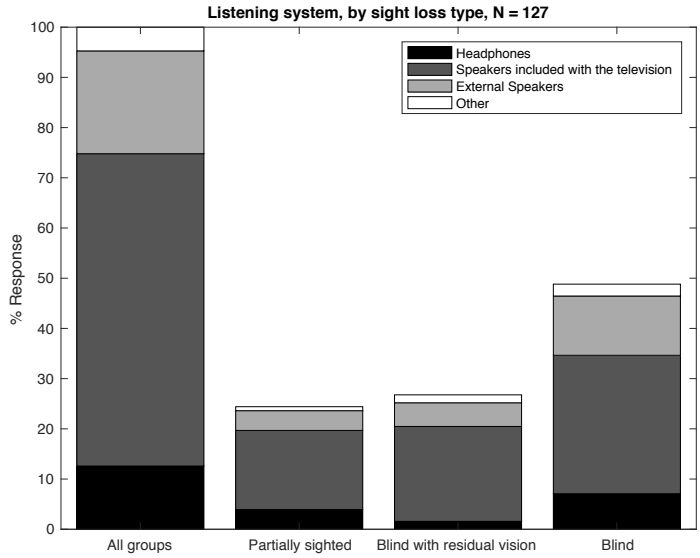

Figure 2 – Comparison of listening habits in relation to type of sight loss

Following up from the question on listening habits, we asked about their experience of surround sound. The majority of our visually impaired participants have only ever experienced surround sound at the cinema (this choice was significantly higher than all the other alternatives) and the same is true for the group of sighted participants.

Table 8 – Comparison of experiences of surround sound

Experience of Surround Sound	Percentage of Responses Visually Impaired Participants	Percentage of Responses Sighted Participants
I have never experienced it	23.6	10.1
I have experienced it at the cinema	39.4	62.4
I have experienced it at a friend/relative's house	9.4	6.4
I have experienced it as part of a research study	3.9	1.8
I have a surround sound setup at home	11.8	15.6
Other	11.8	3.7

When comparing responses across the groups of visually impaired and sighted participants the only significant differences were in responses for 'Never' and 'Other', with both being significantly higher for the group of visually impaired participants. When comparing results across groups with different types of sight loss there was only a significant difference in relation to the choice of 'Friend/Relative's house' with responses being significantly higher for the group of Blind participants when compared to the Partially Sighted and Blind with residual vision participants.

Table 9 – Comparison of experiences of surround sound

Experience of Surround Sound	Percentage of Responses Visually Impaired Participants		
	Partially sighted	Blind with residual vision	Blind
Never	3.94	9.45	10.24
Cinema	16.54	11.02	17.32
Friend/Relative's house	0.79	1.57	7.87
Part of research study	0	0	3.94
In my own home	3.15	4.72	8.66
Other	0	0	0.79

4.1.2 Access to Audio Description at the Cinema

The majority of responses from visually impaired participants indicated that they hadn't been to the cinema in the last year. The only significant difference between sighted and visually impaired participants was in relation to the choice of 'None', which visually impaired participants chose significantly more times.

Table 10 – Comparison of cinema attendance

Cinema attendance in the last 12 months	Percentage of Responses Visually Impaired Participants	Percentage of Responses Sighted Participants
None	33.86	5.5
1-2	19.69	15.6
2-4	18.11	28.4
4-8	14.96	27.5
8-16	7.87	12.8
>16	3.94	10.1
Other	1.57	n/a

Table 11 – Comparison of cinema attendance in relation to age groups

Cinema attendance in the last 12 months	Percentage of Responses Visually Impaired Participants					
	<24	25-34	35-44	45-54	55-64	65+
None	0.79	2.36	5.51	7.87	8.66	8.66
1-2	1.57	3.94	3.94	1.57	4.72	3.94
2-4	0	3.15	4.72	2.36	4.72	3.15
4-8	2.36	1.57	1.57	2.36	3.15	3.94
8-16	0.79	0.79	1.57	0.79	3.15	0.79
>16	0	1.57	0.79	0	0.79	0.79
Other	0	0	0.79	0	0	0.79

When comparing responses within the group of visually impaired volunteers across age groups, significant differences were only found in relation to the 'None' response, for which the responses of the under 24s were significantly lower than for the groups from 45 to 65+. When comparing answers across groups with different types of sight loss we found significant differences only in relation to the responses for 'None' and '1-2'. For the former the group of 'Blind' participants had significantly higher responses than the other two groups and the group of participants that were blind with residual vision had significantly higher responses than the partially sighted group. For the responses '1-2' both the partially sighted and blind groups had answers significantly higher than the group that had residual vision.

Table 12 – Comparison of cinema attendance in relation to type of sight loss

Cinema attendance in the last 12 months	Percentage of Responses Visually Impaired Participants		
	Partially sighted	Blind with residual vision	Blind
None	3.15	10.24	20.47
1-2	9.45	0.79	9.45
2-4	3.94	7.09	7.09
4-8	3.94	5.51	5.51
8-16	3.15	2.36	2.36
>16	0.79	0.79	2.36
Other	0	0	1.57

When considering the number of films attended at the cinema that supported Audio Description, there were no significant differences between 'None of Them' (28.3%) and 'All of them' (22%) but the choice of 'Other' (49.6%) was significantly higher, however, it is worth noting that several responses under the 'Other' category included comments on not having been to the cinema in the last 12 months, not remembering and choices between 'None of them' and 'All of Them'. A recurring comment was that of faulty equipment and lack of availability. Furthermore, it is worth noting that there may be practical difficulties in attending cinema screenings and negative experiences due to faulty equipment, untrained staff and the limited number of screenings available with AD present a barrier for visually impaired people wanting to engage with cinematic experiences.

4.1.3 User Experience

The *User Experience* section of the survey presented volunteers with a grid including 23 statements as shown in Table 13, with choices of Strongly Disagree (SD), Disagree (D), Neither Agree nor Disagree (NAD), Agree (A) and Strongly Agree (SA). The statements explored in this section of the survey were also further investigated through a series of 8 focus groups conducted in York and in Cambridge (UK) with a total of 42 participants. The age of volunteers varied from 21 to 93 years old. Furthermore, 48% of participants had acquired sight loss and 52% congenital sight loss. Moreover, 31% of the participants were blind, 48% blind with residual vision and 21% partially sighted. The focus groups consisted of open discussions and brainstorming activities.

Balance of Audio Levels: Statements 1, 6, 15

The answers to these statements show a spread of opinions on the balance of audio levels between the original soundtrack and the AD track. Statement 1 indicates that 46% of the participants found the balance satisfactory, but when analysing the opposing statement (nº15), although 'Disagree' represents the majority of the responses (38%, and significantly higher than 'Agree' and 'Strongly Agree'), there are no significant differences between 'Neither Agree nor Disagree' and 'Disagree' or 'Agree'. Regarding Statement 6, the most popular choice was Agree (36%) but there are no significant differences between 'Disagree' – 'Neither Agree nor Disagree'; 'Disagree'-'Agree' and 'Neither Agree nor Disagree'-'Agree'. Furthermore, it could also be argued that the combination of 'Strongly Disagree', 'Disagree' and 'Neither Agree nor Disagree' totals 56%. Therefore, results indicate a clear division in opinions.

Diversity: Statements 2 and 17

Data showed that 78% of participants believed that AD should consider differences in audiences and preferences, however, when asked whether AD should be a uniform system regardless of the target audiences, opinions were divided. These contradictory responses are likely the cause of a belief that applying personalised technology to the accessibility sector is not possible or businesses will not invest in such systems. Comments from focus groups seem to support these contradictory statements:

"...you're going to find different people are going to want different ways of audio description...because they are different...we all got visual impairment problems...but our preferences will be different."

"And we all have different levels of sight loss… Our needs are different."

Table 13 – Matrix on User Experience

Statement	**SD**	**D**	**NAD**	**A**	**SA**
(1) The balance of levels between the original soundtrack and the Audio Description is generally satisfactory.	4%	23%	19%	**46%**	7%
(2) Audio Description should cater for a variety of audiences and preferences.	0%	1%	10%	38%	**50%**
(3) My family and friends do not mind listening to the Audio Description.	12%	24%	24%	**26%**	15%
(4) Audio Description distracts me from the film and television programme	**40%**	31%	19%	8%	2%
(5) I enjoy using headphones for AD at the cinema.	5%	15%	**45%**	23%	12%
(6) Audio Description masks elements in the original soundtrack I would like to hear more clearly.	7%	25%	24%	**36%**	8%
(7) With Audio Description I feel like I am getting an objective rendition of the film so I can experience the same than my sighted friends and family.	1%	5%	20%	**43%**	31%
(8) My family and friends would prefer not to have to listen to the AD.	12%	18%	21%	**34%**	15%
(9) I would like AD to include information on specifically filmic elements.	19%	**39%**	19%	18%	6%
(10) The sound quality of the AD track is generally satisfactory.	4%	15%	18%	**56%**	7%
(11) I would like AD to be enjoyable to myself and my sighted friends and family members.	2%	8%	14%	**47%**	28%
(12) AD helps me feel more engaged with the film and television programme.	1%	2%	11%	28%	**58%**

(13) I would like the accessible version of films at the cinema to be available through loudspeakers instead of headphones.	22%	**33%**	25%	13%	8%
(14) I do not mind if Audio Description is not something I can share with friends and family.	2%	9%	20%	**52%**	17%
(15) The balance of levels between the original soundtrack and the AD is generally unsatisfactory.	5%	**38%**	27%	23%	8%
(16) I often feel like I am putting my friends and family through AD.	10%	**30%**	24%	25%	11%
(17) AD should be a uniform system regardless of target audience of the film and television show.	5%	15%	16%	**40%**	24%
(18) With AD I feel like I am getting a second-hand experience influenced by the describer's subjectivity.	14%	**34%**	28%	21%	2%
(19) I often feel my family and friends do not mind listening to the AD track.	10%	24%	**34%**	24%	9%
(20) I am not interested in AD including information on specifically filmic elements.	7%	21%	17%	**36%**	18%
(21) The sound quality of the AD track is generally unsatisfactory.	11%	**47%**	23%	15%	4%
(22) AD is a suitable method for accessibility of creative content.	0%	1%	15%	**59%**	24%
(23) Alternatives to accessibility to creative content should be explored	0%	5%	27%	**50%**	18%

Social Dimensions: Statements 3, 8, 11, 14, 16 and 19

The responses to these statements hint at issues on social inclusivity and accessibility but they also indicate divided opinions which might be a consequence of personal friend and family circumstances.

Engagement: Statements 4 and 12

71% of participants disagreed or strongly disagreed with the statement on AD distracting them, and, in line with this choice, 86% felt AD makes them feel engaged with the film or TV programme.

Sound Reproduction System: Statements 5 and 13

45% of volunteers were neutral regarding the use of headphones in the cinema but the idea of playing back the accessible version of the soundtrack through loudspeakers received divided opinions.

Objectivity vs. Subjectivity: Statements 7 and 18

When asked whether AD users felt they were receiving an objective rendition of the film, 43% agreed with the statement. Responses in relation to the subjectivity of AD were quite divided, 34% of participants disagreed but this choice was only significantly higher to 'Strongly Disagree' and 'Strongly Agree'. It is interesting to note that the focus group data revealed some crucial information regarding this question that hinted at a lack of information available to users on how AD is created, as several users did not seem aware of the fact that the AD track is created by a company external to the production of the film. One of the volunteers said

> The thing you have to try to get out of literature or out of a film is the creative novelty the really new thing which the author is trying to say and that mustn't be diluted by other people's opinion of what they think it is because other people often give you a very partial view. You must go to the complexity if you possibly can of what the author and the different people involved in the film have been trying to project and then you get a much richer experience.

Another volunteer added "...you might as well just not even pay to go to the cinema and, you know, talk to a friend afterwards about what it was about...because you are not getting the real experience."

Filmic Elements: Statements 9 and 20

Responses to these statements seem to indicate a lack of interest in the inclusion of filmic elements to AD services. Although the description of strictly cinematic elements, such as camera angles, is discouraged in the Ofcom guidelines on AD (Ofcom 2015), previous research by Fryer and Freeman on Cinematic AD has shown that users favoured the inclusion of filmic terms to the descriptions (Fryer and Freeman 2012). Such preference is probably due to the fact that people with acquired blindness have access to visual memories and those with congenital blindness can find spatial and auditory equivalents that make such descriptions meaningful (Fryer and Freeman 2012). Moreover, Cinematic AD allows for a greater level of independence than traditional AD as it allows users to deduce the effect of the images presented to them, the same way than a sighted person would (Fryer and Freeman 2012). Such contradiction seems to imply that the inclusion of such elements needs to continue being researched in relation to the best ways in which they can be added, without having a negative impact on audiences.

Sound Quality: Statements 10 and 21

Responses to statements 10 and 21 demonstrated that the majority of AD users are satisfied with the sound quality of AD.

Suitability of Methods: Statements 22 and 23

When asked whether AD was a suitable method 59% selected ‘Agree’, with the second most popular choice being ‘Strongly Agree’ (24%). However, 50% also agreed that new alternatives should be explored, supporting the idea of personalisation.

4.1.4 User Preference

The *User Preference* section was composed of two open-ended questions on the most liked and disliked features of AD.

Table 14 – Preferred features of AD listed in the responses

Preferred Features of AD	Percentage of Responses Visually Impaired Participants
Have access to information that would otherwise be missed	59
Equality/Inclusion	6
Independence	5
Increase of enjoyment and engagement	9
Availability/that it exists	4
Others	17

The mention of 'Have access to information that would otherwise be missed' was significantly higher than all other options. The 'Others' category included the quality of AD, not much being liked, an interest in cinematography, wanting to find out more, the commentators neutral tone and the adaptation of AD to the source material. When studying whether these preferences varied depending on age group we found that the choice of 'Have access to information…', was significantly higher for all age groups when compared to the age group of under 24s. The only other significant differences were related to the 'Others' category, were responses from the 55-64 age group were significantly higher than those in the 25-34 group. When considering responses in relation to participants' type of visual impairment we found significant differences only in the categories of 'Have access to information…' and 'Others'. For the 'Have access to information…' category the choice of this response was significantly higher for blind participants when compared to volunteers with other types of sight loss. Regarding the 'Others' category, partially sighted participants had significantly higher values than those blind with residual vision.

When asked about the least preferred features of AD, 'Masking elements of the soundtrack' was significantly higher than those for the categories 'Social aspects'; 'Headphones', 'Timing', 'Delivery' and 'Nothing they dislike'. The mention of issues of balance of levels between AD and the original soundtrack was significantly higher than the mentions of 'Social Aspects', 'Timing', 'Delivery', and 'Nothing they dislike'. Furthermore, the highest percentage of responses was under the 'Other' category indicating the diversity of preferences; choices for this category were significantly higher than choices for all other categories with the exception of 'Masking elements of the soundtrack'. The choice of 'Masking elements of the soundtrack' as a main source of dislike for AD is particularly relevant for the Enhancing Audio Description project which seeks to remedy this situation through the reduction of verbal descriptions.

Table 15 – Least preferred features of AD

Least Preferred Features of AD	Percentage of Responses Visually Impaired Participants
Limited Availability	10
Masking elements of the soundtrack	15
Levels	14
Amount of description	8
Social aspects	4
Headphones	7
Timing	7
Delivery	6
Nothing they dislike	4
Others	25

The analysis of differences of responses among age groups indicated that significant differences were found in relation to 'Levels', 'Amount of Description' and 'Others'. When focusing on the question of 'Levels' the lack of satisfaction was significantly higher for the 55-65+ groups when compared to the 15-24 group, as well as being significant differences for the 65+ group compared to the 35-44 age group. This might have to do with an increase of hearing difficulties with age. In relation to the 'Amount of Description' the choice of this category among the 55-64 age group was significantly higher than for the 25-34 and 65+ groups. The 'Others' categories was significantly higher in the 35-44 and 55-64 groups when compared to the 15-24 one.

In relation to 'Masking elements' the response from the blind participants were significantly higher than those for the volunteers that are partially sighted. In relation to 'Levels' responses from the blind participants was significantly higher than those for the other groups. The category 'Others' showed that responses from the blind group were significantly higher than the choice of this category by the blind with residual vision participants.

The Future of AD

In this section of the survey participants were asked to share their 'wish list' for the future of AD. The analysis demonstrated that the mention of 'More widely available' is significantly higher than the rest of the categories. Responses for 'Quality' were only significantly higher when compared to those of 'Amount of Description'. The 'Others' category included comments on better quality headphones needed in cinemas as well as more discrete earpieces (potentially people's own ear pieces) in order for it to be less evident that someone was using AD.

In the category of 'More widely available' all age groups from 25-65+ have significantly higher number of responses in this category when compared to the 15-24 group. When analysing results for the category 'More widely available' it was noted that the choice of this category was significantly higher for the group of blind participants when compared to those volunteers that are partially sighted or blind with residual vision. Wishes for the quality of AD to improve was mentioned a significantly higher number of times by blind participants when compared to the partially sighted group. Responses in relation to the interface indicated that groups of blind participants chose this for the future of AD a significantly higher number of times than the group of partially sighted participants.

Table 16 – Wishes for the Future of AD

Future of AD	Percentage of Responses Visually Impaired Participants
More widely available	52
Quality	12
Part of the Production	5
Interface	5
Amount of description	4
Personalised experience	9
Others	15

5. Conclusions

The Enhancing Audio Description project explores how sound design techniques and spatial audio can be used to transform audiovisual experiences for visually impaired audiences, whilst also turning the AD soundtrack from a compliance exercise into an intrinsic part of the creative process. The first stage of this research placed the user at the centre by running a survey and focus groups with visually impaired volunteers, before starting any creative work.

The survey indicated that 78% of visually impaired participants use AD and that the greater the sight loss the more they depend on access services. Furthermore, it is clear that accessing audiovisual content is more often than not dependent on whether AD is available and how easy it is to activate accessibility features, for example, through digital menus. When compared to the results from a parallel survey conducted with sighted volunteers, it became evident that on-demand services pose a problem for visually impaired audiences as data collected indicated that its use was significantly lower when compared to sighted volunteers. This is likely the result of only 6% of ODPS including AD as well as the complicated interfaces visually impaired users need to navigate in order to access the AD track.

Both sighted and visually impaired volunteers indicated that the most popular way of listening to audiovisual material was through speakers included in the television. Furthermore, although both groups indicated that their main access to surround sound is through going to the cinema, visually impaired participants are much more likely to have never experienced spatialised audio, and as a result, are less exposed to the ways in which high quality audio can benefit the listening experience.

The survey also demonstrated that issues with accessibility were disinclining visually impaired people from going to the cinema as the percentage of participants that had not attended the cinema in the last 12 months was significantly higher when compared to the statistics for the sighted group. Furthermore, not going to the cinema was particularly common in visually impaired people over 45 years old as well as those who are blind.

Questions on user experience both posed as part of the survey and through focus groups demonstrated that opinions are often divided (statistically this was demonstrated by the fact that there were no significant differences among choices within a Likert scale). Moreover, 78% of the survey participants stated that AD should consider different audiences and preferences but, at the same time, were skeptical as to whether this was indeed possible due to the cost of providing personalised access. Another telling response was that 86% of survey participants indicated that AD makes them feel more engaged with the content they are watching but during the focus groups they expressed disappointment when finding out that the AD script does not have any input from the filmmakers.

When looking into the preferred features of AD, 59% mentioned having access to information that would otherwise be missed, a feature that was shown to be of particular importance for blind participants. When it comes to features of AD that are disliked, once more opinions were divided. Statements included that AD masks elements of the soundtrack and the unsatisfactory balance between AD and original soundtrack, both features of particular importance for blind participants.

Finally, when discussing the future of AD 52% indicated that they wished it was more widely available providing them with access to a greater range of material.

The survey allowed the research team to gain further understanding on the current state of play of accessibility and emphasised the huge variety of preferences among visually impaired users of AD and, as a result, the need to embrace diversity within accessibility services through personalisation. Focusing on gathering opinions as to what could be changed in terms of accessibility to film and television allowed us to explore a range of possibilities in which the research could develop based on users' preferences, in this way our practical work will be focusing on the changes that are more likely to address present challenges. The research team will use the data gathered to start work on turning a short film without any accessibility features into an accessible film that provides an alternative to traditional AD and takes volunteers' feedback on board.

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References

Bosanquet, N. and Mehta, P. (2008) (Abstract). *Evidence base to support the UK Vision Strategy*. RNIB and The Guide Dogs for the Blind Association.

Branson, J. (2017) Bringing Media Accessibility in From the Cold: A Comparative Analysis of Collaborative and Standard Approaches to AD and SDH. *I Media Accessibility Platform International Conference*, 5-6th October, Universidad de Vigo.

Chion, M. (1999). *The Voice in Cinema*. New York: Columbia University Press.

Douglas, G., Corcoran, C. and Pavey, S. (2006). *Network 1000 - Opinions and circumstances of visually impaired people in Great Britain: report based on over 1000 interviews*. Visual Impairment Centre for Teaching and Research, University of Birmingham.

Drossos, K. et al. (2015). Accessible Games for Blind Children, Empowered by Binaural Sound. *Proceedings of the 8th ACM International Conference on Pervasive Technologies Related to Assistive Environments*, Article No. 5, Corfu, Greece, July 1-3, doi: 10.1145/2769493.2769546.

Fels, D.I. et al., (2006). Odd Job Jack described: a universal design approach to described video. *Universal Access in the Information Society*, 5, 73-81, doi: 10.1007/s10209-006-0025-0.

Fryer, L. and Freeman, J. (2012). Cinematic language and the description of film: keeping AD users in the frame. *Perspectives: Studies in Translatology*. 1-15, doi: 10.1080/0907676x.2012.693108.

Gálvez, M. and Fazi, F. (2016). Listener-Adaptive Filtering Strategies for Personal Audio Reproduction over Loudspeaker Arrays. *Audio Engineering Society 2016 International Conference on Sound Field Control*, Guildford, UK.

Greening, J. and Rolph, D. (2007). Accessibility: raising awareness of audio description in the UK. In C.J. Díaz, P. Orero & A. Remael (Eds), *Media For All: Subtitling for the Deaf, Audio Description, and Sign Language – Approaches to Translation Studies*. Rodopi: Amsterdam, New York.

J. Hassell (2009, August 27), *BBC iPlayer audio description is now available*. [Blog Post]. Retrieved on November 16, 2017 from http://www.bbc.co.uk/blogs/bbcinternet/2009/08/bbc_iplayer_audio_description.html

ITC (2000). Guidance on Standards for Audio Description.

Kearney, G. *et al*., (2009). Towards efficient binaural room impulse response synthesis. *Proceedings of the EAA Symposium on Auralization*, Espoo, Finland, 15-17 June

Kearney, G. (2016). The perception of auditory height in individualised and non-individualised dynamic cross-talk cancellation. *Audio Engineering Society 2016 International Conference on Sound Field Control*, Guildford, UK.

Lopez, M. and Pauletto, S. (2009). The Design of an Audio Film for the visually impaired. *15th International Conference on Auditory Display (ICAD)*, Copenhagen, Denmark, 18-22 May.

Lopez, M. and Pauletto, S. (2009). The Design of an Audio Film: Portraying Story, Action and Interaction through Sound. *The Journal of Music and Meaning*, 8.

Lopez, M. and Pauletto, S. (2010). The Sound Machine: a study in storytelling through sound design. *Proceedings of the 5th Audio Mostly Conference*, Piteå, Sweden, 15-17 September.

Lopez, M. (2015). Perceptual evaluation of an audio film for visually impaired audiences. *Audio Engineering Society (AES) 138th Convention*, Warsaw, Poland. 7-10 May.

Mapp, P. (2016). Intelligibility of TV and Cinema Sound. In *Reproduced Sound Conference*, Southampton, UK, 15-17 November.

Masterson, C. et al., (2012). HRIR Order Reduction using Approximate Factorisation. *Audio, Speech and Language Processing, IEEE Transactions*, 20 (6).

Ofcom (2014) Provision of Video on Demand Access Services report. Retrieved November 16, 2017 from All here: https://www.ofcom.org.uk/tv-radio-and-on-demand/information-for-industry/on-demand/access-services-european-works

Ofcom (2015) *Code on television access services*. Retried on September 4, 2017 from http://stakeholders.ofcom.org.uk/binaries/broadcast/other-codes/tv-access-services-2015.pdf.

Ofcom (2015) *Provision of Video on Demand Access Services report*. Retrieved November 16, 2017 from All here: https://www.ofcom.org.uk/tv-radio-and-on-demand/information-for-industry/on-demand/access-services-european-works

Ofcom (2016). *On demand programme services: Access Services report*. Retrieved November 16, 2017 from All here: https://www.ofcom.org.uk/tv-radio-and-on-demand/information-for-industry/on-demand/access-services-european-works

Ofcom (2017, April 6). Accessibility of on demand programme services. Retrieved November 16, 2017 from https://www.ofcom.org.uk/consultations-and-statements/category-1/on-demand-accessibility

Rai, S. (2011). *RNIB International AD Exchange Study: Observations from a focus group study*. Media and Culture Department, Royal Institute of Blind People.

Rai, S. (2015). *Audio Description App User Trial: Report, in partnership with MovieReading*. RNIB Solutions.

Remael, A. (2012). For the use of sound. Film sound analysis for audio-description: some key issues. *Multidisciplinarity in Audiovisual Translation*, 4, 255-276, doi: 10.6035/monti.2012.4.11.

RNIB, *Sight Loss Data Tool*, https://www.rnib.org.uk/professionals/knowledge-and-research-hub/key-information-and-statistics/sight-loss-data-tool. Last accessed on 30th March 2018.

Schafer, R.M. (1994). *The Soundscape: our sonic environment and the tuning of the world*. Rochester: Destiny Books.

Schmeidler, E. and Kirchner, C. (2011). Adding Audio Description: Does it Make a Difference? *Journal of Visual Impairment and Blindness*, 197-212.

Szarkowska, A. (2013). Auteur Description: From the Director's Creative Vision to Audio Description. *Journal of Visual Impairment and Blindness*, 107(5), September-October.

Udo, J.P. and Fels, D.I. (2010). The rogue poster-children of universal design: closed captioning and audio description, *Journal of Engineering Design*, 21, 2-3, 207-221, doi: 10.1080/09544820903310691.

Walczak, A. and Fryer, L. (2017). Creative description: The impact of audio description style on presence in visually impaired audiences. *British Journal of Visual Impairment*, 35(1), 6-7.

Whitfield, M. and Fels, D. (2013). Inclusive Design, Audio Description and Diversity of Theatre Experiences. *The Design Journal*, 16 (2), 219-238, doi: 10.2752/175630613x13584367984983.

World Blind Union (2011). *World Blind Union Toolkit on providing, delivering and campaigning for audio description on television and film*.