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From DTV4ALL to HBB4ALL: Accessibility in Europe Broadcast*Pilar Orero***1. The European Policy Support Programme**

Europe is a recipient of the UN Convention on the Rights of Persons with Disabilities (UNCRPD) on Information and Communication Technologies (ICT). The convention stipulates that all signatory states recognize the right of persons with disabilities to take part on an equal basis with others in cultural life (Article 30). To implement this, the states must take appropriate measures to ensure that persons with disabilities:

- have access to cultural materials in accessible formats, and that
- access to television programs and films is also ensured.

Concerning the European Commission, a legal framework was set up in 2007 with the 'European i2010 initiative on e-Inclusion - to be part of the information society'; this called on the ICT industry to work to help people with disabilities to access digital TV and electronic communications products. Much work has been achieved, and a lot is still to be done.

The framework of the European Commission encourages media service providers under their jurisdiction to ensure that their services are gradually made accessible to people with a visual or hearing disability. There are various rules and differences between the countries, there are stronger commitments for public broadcasters and services compared to private players (broadcast TV versus video on

demand). Altogether, accessibility is expected to bring new opportunities for the value chain and especially end user benefits, whether they have impairments or not.

According to the UN communications agency, the ITU, the need for ‘accessibility’ is not confined to people with physical or mental disabilities. Anyone can be permanently or temporarily ‘disabled’, for example, if they try to receive a phone call in a noisy environment or speak a language for which there are few internet resources. Rather than treating accessibility as important solely for addressing the needs of people with disabilities, elderly people or those with temporary impairments, accessibility should be regarded as a universal requirement that aims to ensure that ICTs of all kinds can be used with ease by people with the widest range of capabilities. In this way, all the world’s people, whatever their individual abilities or disabilities, stand to benefit from an ‘accessible ICT world.’

Within this context the European ICT Policy Support Programme (ICT PSP) aims at stimulating innovation and competitiveness through the wider uptake and best use of ICT by citizens, governments and businesses. The two EU projects presented in this chapter are part of the same EC call: TCP IP. This fact defines the projects’ nature and scope. The TCP Industrial Partnership (IP) is a call to test existing technology through pilots across Europe with no research objective. DTV4ALL and HBB4ALL, the two projects under the microscope here, focused on audiovisual media accessibility. Given the direct link of media accessibility to languages, Europe is the perfect test bed for accessibility. Diversity in languages, language conditions, and translation traditions is to be found. According to the 2012 EU survey¹ in Europe ‘there are 23 officially recognized languages, more than 60 indigenous regional and minority languages, and many non-indigenous languages spoken by migrant communities.’ Languages hold a different status: some are official and spoken by a

large number of people such as Polish, French, Spanish or German, other languages are small and while they enjoy the official recognition in their country, they are not accepted as EU language such as Gaelic or Catalan. Some countries are monolingual, for example Germany (German), some countries are bilingual, for example Belgium (French and Flemish), and some are multilingual, for example Spain (Basque, Castilian, Catalan, Galician). Finally we have English - a unique language in itself - spoken in the UK and Ireland, but enjoying the attribute of *lingua franca*, especially when dealing with multimedia production – most audiovisual content is produced and distributed in English worldwide. Audiovisual translation traditions are also diverse. Four EU countries generally use dubbing when translating audiovisual media: France, Germany, Italy and Spain. The majority of EU countries use subtitling, and a few countries in the East of Europe translate with voice-over.

This wealth in diversity has a direct impact in media accessibility, since audio description (AD) behaves differently when produced in the same language situation, that is, English>English, when subtitles are used, or with voice-over. In all cases, the possibility of translating the AD is an added situation. The two EU projects DTV4ALL and HBB4ALL tested access services in all these language conditions, and translation tradition across Europe. This chapter will focus on the pilots and tests performed with audio description within the two EU projects DTV4ALL and HBB4ALL, and some ongoing tests related to the latter.

2. The Project DTV4ALL

The switch-off of analogue television in Europe by 2012 represented both a challenge and an opportunity for access services. It was a challenge for two very different

reasons. Firstly, many people who had no problems accessing analogue television would experience some difficulty in accessing digital television. The extent of this issue is such that approximately 15 per cent of Europeans have difficulties in accessing digital television for reasons such as: hearing impairments, dyslexia, visual impairments, complexity of setting up a digital receiver or set-top box, remote controls they find difficult to use, and Electronic Programme Guides (EPG). Accessibility to TV content is especially difficult when there are over one hundred channels to choose from. Secondly, the analogue switch-off introduced widespread improvements to the quality of existing digital television programmes, collectively known as second-generation digital television, such as high definition television (HDTV). As the amount of information that can be sent by a digital television transmitter is limited this posed a challenge to some existing access services. For example, the amount of information in a high definition television programme is significantly higher than the amount of information in the same programme delivered in standard definition. This means that there is a pressure to reduce the amount of transmitted information devoted to access services due to the demand for programmes to be delivered in high definition. For example, sending two video signals (one for the regular programme, one for the sign language) is now a problem.

At the same time the analogue to digital switch presented two opportunities to improve access to digital television for those with physical, mental or age-related impairments: opportunities to extend the provision of existing mature access services (subtitling, audio subtitling, audio description, and sign language) to European countries that do not currently provide them, and opportunities to provide new kinds of access to optimize amount of information transported, and also services known as emerging access services (clean audio and slow reproduction). To ensure the

challenge was addressed and the opportunity exploited, DTV4All took action on two fronts:

- DTV4ALL ensured the widespread adoption of mature access services for first generation digital television.
- DTV4ALL identified, assessed and promoted emerging access services for second generation digital television.

The most valuable contribution DTV4ALL made was to identify the enablers that allow a core set of access services to be offered in all EU member countries in the near future.

The objectives of DTV4ALL were to:

1. Offer and evaluate mature subtitling, audio description, audio subtitling and signing services in a minimum of four territories within the European Union for at least 12 months.
2. Identify improvements to existing access services and ways of addressing the key technical, organisational and legal obstacles to the sustainable take-up of these services in the timeframe 2008-10 throughout Europe.
3. Identify and prioritize key emerging access services, and the devices and platforms needed to support them for the period 2010-12 in terms of technological feasibility, perceived value to their intended users and business model viability.

4. Make recommendations regarding mature and emerging access services to bodies representing stakeholders in the access service value chain on the basis of which these bodies can take appropriate action in relevant standardisation bodies.

3. Audio Description in DTV4ALL

Two very different pilots were run for AD in DTV4ALL. The first related to AD technology looking at delivery scenarios, and the second pilot tested content dealing with the reception of AD in different languages and cultures and the translation of AD.

3.1 AD service scenarios

Five possible scenarios for distribution and reception of an enhanced audio description service were drafted for the project (Vilaró et al., 2012). The respective prototypes were developed in order to prove their technical feasibility and, more importantly, in order to be able to conduct a battery of tests over these prototypes for usability (including ease of use and graphic interface), utility and quality of the received signal. Tests were performed by the Catalan public broadcast TVC and Universitat Autònoma de Barcelona UAB. The five scenarios were:

1. Live streaming Internet TV: This scenario emulates the live streaming IP broadcasting of digital TV media content with audio description. The contents were broadcast from TVC's servers to the UAB laboratory.

<INSERT FIGURE 13.1 HERE>

Figure 13.1 Live Streaming Internet TV distribution

2. AD individual versus collective reception: This scenario combines the simultaneous reception of standard media content with the reception of AD enriched content in the same room. It aims at proposing a solution for a group or family (when watching TV) in those households with a member with visual impairment. For the tests, participants were given a laptop with a DTT USB tuner that was used to listen to the AD enriched audio thanks to headphones. The image was directly seen on the TV screen.

<INSERT FIGURE 13.2 HERE>

Figure 13.2 Simultaneous AD-non AD content reception scenario

3. On-demand AD (received on a set-top box): This scenario lets the user select AD enriched contents on demand amongst a list of programs. The user can then receive them on a TV screen thanks to the set-top box, as the data is streamed via the Internet.

<INSERT FIGURE 13.3 HERE>

Figure 13.3 VoD with AD (broadcaster-mix) distribution

4. On-demand AD (received on a PC): In this scenario, participants were asked to download content files on a PC or a laptop in order to view them on the same computer.

<INSERT FIGURE 13.4 HERE>

Figure 13.4 Distribution of AD enriched contents by downloading

5. On-demand AD (podcast reception): This scenario lets the user download audio files (which are enriched with audio description) on a PC. This way, the user can listen to them via the same computer, or with any other portable device. A laptop with VLC player software was used for the reproduction of the test contents.

<INSERT FIGURE 13.5 HERE>

Figure 13.5 Podcast distribution

A selection of participants followed the recommendations set by the ITU on methodologies for the subjective assessment of quality in television pictures (ITU-R BT.500-11). Participants were not experts, as they neither worked in the area of quality in multimedia systems nor were consultants in this field. The test participation was voluntary. The sample of participants was 14 people (six women and eight men). Participant ages were between 21 and 40 years, with an average age of 28.8 years. They had Catalan as language and used computers on a daily basis.

A specific criterion was followed when selecting volunteers. First they were tested for vision and hearing. They were subjected to several standard tests. Regarding visual tests, visual acuity was assessed with a computerized version of the Landolt test. Similarly, the possibility of the existence of colour blindness was evaluated with a printed version of the Ishihara plates (1917). Finally, regarding auditory perception, participants answered a questionnaire about everyday situations that can be indicative of potential hearing loss.

Additionally, participants were surveyed with the aim of defining a profile of the sample in relation to the habits and preferences when consuming audiovisual content. The procedure for collecting the data was challenging. The reason for this is that the evaluation of some scenarios had to be undertaken under a time window, as these scenarios were linked to the broadcasting of live content (AD enriched) by TVC. As a consequence, planning for organizing the tests was designed in order to maximize the impact of each session: two participants were requested per session, and each participant did the tests in a different order, so that some visualization periods could be shared.

The participants were given information under the scope of the UAB ethics committee protocol. Several documents were written detailing a set of instructions and the purpose of the test, and some specific verbal instructions were established for interacting with the volunteers. Once participants arrived at the laboratory, they were properly informed about the objectives and tasks to be performed through a written document, and they also filled-in UAB ethics forms. Once they resolved any possible doubts and having verified that the participant had correctly understood the purpose and its work, participants were asked to sign the consent form of participation, as part

of the ethical procedure. At this time, the subjective evaluation session began. At all times the volunteers were accompanied by the leaders of the test.

The measuring instruments used for the subjective assessment of TVC emerging services accessibility were a set of five questionnaires, each of which was adapted to the scenario to be assessed. Each questionnaire consisted of three scales, which assessed three different aspects of the accessibility emerging services: usability, utility and quality of the received signal. The purpose of these questionnaires was to gather, in an organized manner, the indicators related to the psychological factors involved in each aspect. That is, the questionnaires helped us to obtain information from participants about their attitudes and opinions about a particular assessed issue that cannot be measured directly.

The results of the subjective assessment prove that the services tested in this trial were viable. The numerical data collected, together with the users' opinions, indicated what information should be taken into account when planning the deployment of these services. Table 13.1 presents a summary of the main features of the services that were rated by the participants as positive or as needing improvement. The round dots (•) indicate positive ratings in a specific scenario. The triangles (Δ) indicate that certain aspects, not decisive for the deployment of the technology, can be improved. The squares (□) indicate the presence of fundamental aspects that need improvement.

Table 13.1 Summary of the outstanding features in each scenario

<INSERT TABLE 13.1 HERE>

When examining the data in the table, several patterns emerge. Usability, ease of use in particular, was rated highly across the board. It is also interesting to note that the graphic interface was evaluated as needing improvement, especially when including sound descriptions in the menus. The lowest ratings were for the quality of the systems that use streaming. Although it is important to keep in mind that the services evaluated are not comparable, the patterns that emerge from the data are real and the ratings for specific features are consistent (for example, ease of use). This fact makes the results obtained much more reliable and credible since the participants systematically had similar opinions.

With regard to the assessment of Scenario 1, Live streaming Internet TV, the conclusion is that the system's usability and usefulness are good, while content reception quality must be improved, since the picture is sometimes affected by glitches. Despite this problem, having the same live DTT broadcast available on the Internet was seen as highly useful. In the case of Scenario 2, AD reception, both usefulness and quality were generally satisfactory. Since the participants without vision impairments were not inclined to use content with AD, the personalized TV viewing system for the visually impaired (via a portable PC) was rated as highly useful. This personalized option, which could suit individual preferences within the family, was rated as the most positive feature by the participants. It was suggested that a smaller device for DTT reception with audio description be used for user convenience. On scenario 3, On-demand AD via a set-top box, usability and usefulness were highly rated. However, aspects of the quality of content received via streaming must be taken into account to try and eliminate picture break-ups and make reception quality as good as the DTT signal. Nevertheless, the participants also pointed out the usefulness of being able to access previously broadcast content at any

time. The evaluation of Scenario 4, On-demand AD via a PC, was highly favourable both from the viewpoint of usability and usefulness. Being able to access content at any time and from any place was most appreciated. The rating of quality was affected by content download time (dependent on Internet access bandwidth). Some participants suggested adapting the content for use on mobile devices. Finally, for Scenario 5, On-demand AD via podcast, the data indicated that usefulness was rated a little lower than in the previous scenario mainly because the participants found it hard to follow the series with the audio alone (podcast), even with the help of audio description. Apart from that, both usability and quality were rated very high.

In short, the emerging services analysed in this trial were technically viable, but some aspects of the quality of the service had to be improved. The usability of these services, with respect to ease of use, was clearly validated by the participants in the trial and some suggestions were made for improving the graphic interface. The services' usefulness also received user approval, and audio description was very highly rated, not only as a tool for making content more accessible but also as a way of providing solutions for families with different needs. Given the above data, it was proven that the proposed services were given a high level of approval by consumers, that the services were easily accessible, and that their quality was high enough so as to consider launching them.

3.2 Translating audio description across Europe

Audio description has been developing very unevenly across Europe. In some countries (such as the UK) AD has already come of age, whereas in other countries (such as Croatia) it is still at the crawling stage. As a result, countries belonging to the

former category have worked out national AD standards and practices, whereas those in the latter group are lagging far behind with no principles in place to guide audio describers in their work. The big picture of the practice of AD across Europe is that is uneven and differs from country to country and so does the quality of ADs.

Given the above considerations, AD practitioners and researchers across Europe have become aware of the growing need to develop and standardize AD guidelines (see, for example, the ADLAB project and Taylor's chapter in this book). However, before streamlining European AD standards and practices, two basic issues have to be addressed: on the one hand, whether cross-linguistic and cross-cultural differences in Europe are not significant enough to prevent such common European AD guidelines from being developed, and on the other, the possibility of translating AD scripts. Both aspects were researched within the DTV4ALL project.

The development of common European AD standards would by all means help improve and even out the quality of AD across Europe, whereas translation of AD scripts could increase the volume of audio described materials, as instead of creating AD from scratch, it could be translated from already existing scripts. Translating meant primarily from English, as the UK is at the forefront of the audio description market with the greatest supply of audio described audiovisual materials. In order to answer the two questions mentioned above, it was essential to verify whether people living in different countries, with different linguistic and cultural backgrounds, perceive and interpret visual stimuli in a similar manner. To do that, the researchers involved in the project decided to employ a methodology developed for testing reception of the same visual input across languages and cultures.

The methodology used in the Pear Tree Project (PTP) for AD (Orero, 2008) followed the Pear Stories Project (Chafe, 1980). The primary aim of the Pear Stories

Project was to find an interrelation between knowledge and manner of thought formulation. In particular the researchers wanted to find out how people talk about events they participated in as well as how they describe them after some time. An assumption was made that human knowledge is stored in the mind in part analogically, and not only propositionally (which can be supported by the fact that sometimes it is difficult for us to express what we think and that we rarely express the same thoughts in the same manner on different occasions). Additionally, the study was to involve persons representing different languages and cultures in order to perform a cross-linguistic and cross-cultural analysis. A six-minute film was created especially for the purpose of the study (the so-called 'pear film'). The film was shot in California, in colour, with sound but with no dialogue. It had simple editing and it referred to universal experiences and did not include any culture-specific or historic references so that representatives of various cultures could understand it and recount it.

The PTP was adapted to the DTV4ALL audio description tests aims. To this end, a set of written instructions was developed and distributed among researchers conducting the study in their respective countries. According to the instructions, the subjects were supposed to watch the film once and then write down what they saw (in longhand, so that any corrections or deletions could be identified). The instructions given to the subjects taking the test were to recount the film as if describing it to a person that simply has not seen it. Before starting the actual study, the subjects were asked to fill in a questionnaire about age, sex, mother tongue, language used most often in their everyday communication and longer stays abroad. For each language included in the project there were approximately 20 subjects, the vast majority of

whom were female, aged 17-25, and they were all native speakers of the language in which they provided the descriptions.

The study was conducted in six countries and it involved six languages, which are listed below, along with the names of researchers involved in data collection and analysis and their affiliations:

- Afrikaans (J.-L. Kruger, N. Wilken, H. Kruger; North-West University, Republic of South Africa)
- Catalan (A. Matamala, P. Igareda; Universitat Autònoma de Barcelona, Spain)
- UK English (T. Muller; Roehampton University, United Kingdom)
- Italian (E. Di Giovanni, S. Giustozzi; Università di Macerata, Italy)
- Polish (A. Chmiel, I. Mazur; Adam Mickiewicz University, Poland)
- Spanish (P. Orero; the Autonomous University of Barcelona, Spain)

The reception-based study showed the many existing variations among the languages involved and also among the subjects within the same language. This is due to the fact that reception is individual and depends on the subject's background, personal experiences or world-view. A higher level of analysis concluded that common European guidelines could be developed, provided they take into account linguistic and cultural differences as well as preferences of visually challenged audiences in the countries concerned. Along similar lines, it was clear that translation of AD scripts is possible as long as translated ADs comply with the prevailing norms and preferences in the respective languages.

4. The Project HBB4ALL

The project Hybrid Broadcast Broadband for All (HBB4ALL) investigates accessibility services in the new hybrid broadcast-broadband TV (HbbTV) environment: that is, the new communication ecosystem where broadcast converges with broadband. HBB4ALL has four pilots: subtitling, alternative audio production and distribution, user interaction, and signing services. Audio description falls under the ‘alternative audio production and distribution’ and addresses the use of dedicated audio-based access services to specifically support users who are hard-of-hearing (clean audio), have vision disabilities (audio description and spoken subtitles) but also the provision of additional audio channels via broadband (IP) more generically to allow multi-language transmission - and potentially multiplatform support, for example, on-demand online media libraries as well as HbbTV applications. At the time of writing this article the project is in the middle of its life. Some tests have already been finished while others have just started. Tests performed were related to checking audio description uses beyond its intended accessibility service for broadcast, such as a didactic tool (see Walczak’s chapter in this book and Section 4.1). Automation in the production and distribution of audio description through speech technologies and machine translation was also tested (see Matamala’s chapter in this book). Other tests are ongoing to test the usability of audio description distribution through secondary devices (see Section 4.2), and to check on the quality of audio description quality in terms of genre specific features (see Section 4.3) and sound mix (see Section 4.4).

4.1 Audio Description as a didactic tool

User tests on the use of audio description as a didactic tool confirmed that such a service could enhance learning in general, and enhance learning foreign languages in particular. Another experiment, where AD was offered on a secondary screen as part of the cinema experience for the blind and partially sighted, proved a high degree of user acceptance for this type of application.

This study (see Walczak's chapter in this book) was carried out in Poland in the first half of 2014, with 36 blind and partially sighted participants and sighted students. The study aimed at examining the influence of audio described films centered around introducing new vocabulary on foreign language learning of school children with and without vision impairments. The audio-visual material employed for the purposes of the study included four episodes from the educational animation series *Say it with Noddy in English*, namely: 'Hammer', 'Moon', 'Present' and 'Paint.' All of them were dubbed into Polish.

The key objective of the study was to examine whether educational movies with AD facilitate foreign language acquisition and whether AD itself can help both blind and sighted children to better understand the content of such movies. The study also tested whether there are any differences in the results between visually impaired children and their sighted peers. Finally, the study looked into whether audio describing these kinds of films could prove helpful for young viewers with and without vision impairments, and more importantly, whether such audiovisual materials could become an additional educational tool.

The study showed that the above assumptions were correct and it is worth introducing films with AD into the school educational programmes. The educational value of AD was confirmed, not to mention the integrating function of films with AD.

4.2. Audio description and second screen terminals

These tests were set up to check on the user reception on usability and accessibility for the app ArtAccés, developed by Catalan Government. During the Sitges Film Festival 2014, ArtAccés for AD was tested. The app had the following functionality:

- Download, store, and play adapted content (subtitles and/or Audio Description).
- Synchronize at any time during play, through sound stamp.

<FIGURE 13.6 ABOUT HERE>

Figure 13.6 Screen for ArtAccés application

The Catalan Government made possible the tests taking care of the content services, contacting user associations (ACCAPS, FESOCA, ONCE and ACIC), paying for tickets to enter, and also booking a special room for interviews. Public Catalan TV3 and UAB prepared tests and questionnaires. 15 users were present for the AD tests (seven men and eight women). Out of them ten were blind and five partially sighted. There was also a control group consisting of five sighted persons.

In general, the blind and partially sighted users evaluated the application positively. They especially liked the fact that they could download the AD file at home. They underlined that it was comfortable for them to use the application. The cinema was full of people and they did not receive any complaints as far as the use of the application was concerned. The stability of the application and the fact that it did not fail throughout the film were listed as its strong points, whereas interaction with

interferences compared with other applications were deemed its weak point. Also, a definite advantage of the application is the fact that its display screen is black, which does not consume much battery and does not bother other cinemagoers. Bearing in mind all this, it is considered that the application has a big potential. As soon as improvements have been introduced, it could be tested in a more representative context, for example, with other films, other language versions and perhaps with other devices like tablets or perhaps wearables such as active glasses. More tests should also be carried out taking into account different types of user profiles. An important issue was the audio mix. The volume of the movie at times was very loud which made it difficult to hear the AD, even at the highest volume.

4.3 Quality of genre-specific AD

User tests were also carried out to check the preferences for neutral vs alternative version of AD. For the purpose of the study, two AD scripts were prepared: one with emotive references taken from the screenplay and the other more detached, which follows the existing tradition of ‘what you see is what you say’ rule. It was verified whether a powerful and naturalistic drama would render itself to this type of description and whether this type of description increased the target group’s engagement in the film. In this context, we also touched upon the question of AD quality which is inextricably linked to users’ experience and proposed a tool for measuring it, that is, the ITC Sense of Presence Inventory (ITC-SOPI, Lessiter et al., 2001) short form. Such questionnaires were handed out to participants after the screening and they included the evaluation of their emotional engagement and

immersion in the content presented. The first tests were carried out with 15 blind and partially sighted participants in Poland.

In general, as intermediate summary, it can be said that the hypothesis has been confirmed: AD users showed a preference for the alternative version of AD (compared to a neutral AD version). The above seems to be quite an important finding as far as training of audio describers is concerned. However, in order for it to be incorporated in the official AD guidelines, further testing seems indispensable. If confirmed, the preference by users of non-objective AD is a ground-breaking result, which may alter AD content production.

4.4 Sound mix in audio description

Given the different technical processes and requirements of sound and sound mixing depending on the channel through which it reaches the listener, these tests by UAB are restricted to sound quality in AD of prerecorded content to be TV broadcasted. This restriction is due to two main reasons: 1. TV is the most common channel of audio-visual content consumption since 97 per cent of households had a TV and regard it as basic hardware, and 2. because the content needs to be delivered with sound levels, mixing, and adjusting, and it requires prerecorded content to work with.

The hypothesis of these ongoing tests is that a 'safe area' in terms of intelligibility can be defined to guarantee that the AD narration is always heard correctly in any audio-visual product/service. An adequate sound post-production process can guarantee that such a 'safe area' is always maintained, to the same extent as an inadequate sound mix could seriously threaten the quality of any AD. As preliminary conclusion it has been found that a manual adjustment of the AD

narration volume levels during the post-production process would imply an increase in the audio quality of the final result. This process, opposite to what was proposed in the ITC guidelines (Rodríguez, forthcoming), would keep the original soundtrack and effects intact, preserving thus the original features and atmosphere of the work.

Having the AD narration volume pre-adjusted to the loudness level of each of the scenes where it will be inserted, would avoid abrupt atmosphere disruptions of quiet scenes and possible difficulties of understanding of the narration in noisy scenes. In the future, this post-production process would contribute to maintaining a consistency of the volume of the AD narration in relation to the original soundtrack all through the program/film described.

5. Conclusion

The two EU projects piloted and tested across Europe partly focused on audio description as an audiovisual media service. At the time of working on DTV4ALL the idea of a media convergence through ‘connected TV’ was not on the horizon, still audio description scenarios were created and tested. Results from these tests have been of great relevance for the new convergence ecosystem where broadband delivery meets broadcast delivery in order to aid media content distribution. Tests also confirmed that audio description could be translated, taking into consideration cultural issues in the target language. In the new HBB4ALL project machine translation for audio description is tested, and AD is also viewed as a service beyond accessibility. Audio description as a tool for learning is being tested, with positive results. On the technical side, in this latter project sound mix is being focused upon with ongoing tests. There is a need to verify the only explicit recommendation (ITC

guide) to sound mix, and perhaps provide information towards a contribution for a standard on sound mix for audio description.

The two EU projects looking at accessibility services in broadcast have allowed EU academics to join forces in common research objectives. This has many benefits: from financial support to human contact. It has allowed the establishment of a stable community of researchers who share and develop research methodologies, stimuli for tests, test replication in different languages, translation traditions and cultures. All this knowledge is working actively towards building a critical mass much needed when starting a new discipline such as AD.

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