#### Towards recommendations for sign language interpretation on TV

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**Abstract:**  Sign language interpreting (SLI) on TV is still in need of basic research to support video production guidelines, a complex matter given the variety of sign language styles and screen compositions found among international broadcasters. European directives put pressure on broadcasters to increase the number of broadcasting hours with sign language and on regulators to benchmark quality standards for SLI. The current paper aims to draft recommendations regarding the formal parameters for displaying SLI on TV, such as size of the SLI window or colour combination. In section 2, we analyse 100 different screenshots showing current SLI video production designs offered by 42 international broadcasters. This analysis has two aims: (1) to offer an overview of current SLI access services in order to gain a better understanding of the Audio-Visual Media Standard Definition challenge; and (2) to propose a set of variables to be further studied. Next (§ 3), we report on feedback gathered from stakeholders in Catalonia, namely sign language interpreters working for TV and signing deaf TV consumers. The article concludes with a list of recommendations that may be applied by broadcasters offering SLI access services.

#### Key words: accessibility, deaf users, sign language interpreting, focus groups, access service, media, recommendations, guidelines.

#### Introduction

Sign language interpreting (SLI) on TV is one of the three major TV accessibility services, along with subtitling and audio description (European Parliament, 2010a; European Parliament, 2010b; European Parliament, 2015; International Telecommunication Union [ITU], 2014a; Looms, 2009). SLI access services need to improve both in terms of quantity and quality. On the one hand, affordability of the services should go beyond the amount of current broadcasting time (European Broadcasting Union [EBU], 2016; European Regulators Group for Audiovisual Media Accessibility [ERGA], 2016; Office of Communications [Ofcom], 2017; Haualand & Allen, 2009). On the other hand, the quality of the SLI service may depend on various factors such as the language and interpreting skills of the interpreter, or the technical requirements impacting legibility of the signed content. "Television programmes […] may add layers of complexity by placing sign or text over the existing visual message. This creates interesting issues which are currently unresolved as to how to convey information with mixtures of signing, visual action, speech and text" (Kyle, Reilly, Allsop, Clark & Dury, 2005: 57). Hence, how to split two screens for simultaneous broadcast is a technological challenge related to the user experience and service usability, as it impacts on sign language legibility on screen.

Previous studies, mainly from the past EU funded project DTV4ALL, indicated that users prefer an inversion of the content priority where SLI has (visual) priority over the broadcast content as can be seen in Image 1 (DTV4ALL, 2008; Guttermuth, 2011; Kyle, 2007; Whermeyer, 2014).



Image 1. SLI in the Danish broadcaster DR (reproduced from DTV4ALL, 2008)

While previous research indicates that the screen configuration as shown in Image 1 is the preferred format for the inclusion of SLI on TV, these findings have not translated into standardised guidelines (Independent Television Commission [ITC], 2010; Esteban-Saiz, 2017; National Disability Authority [NDA], 2014).

The overarching aim of the present paper is to identify the best screen configuration for broadcasting SLI on TV. In order to identify which formal features for SLI configuration could be recommended, we have conducted a qualitative analysis of current SLI practice. First, we analysed the current screen configurations applied by 42 international broadcasters (section 2), to identify the variety of formal features that may occur. Second, we gathered feedback from stakeholders in Catalonia —SLI interpreters and deaf signing TV consumers— in order to evaluate the formal features identified in the previous phase and identify what features enhance user experience and usability (section 3). The hypothesis is that the preferred screen configuration identified in previous research (see image 1), is influenced by the TV genre most widely available to deaf signing TV consumers, namely news broadcasts. Language information in news programs is more relevant than visual information, especially when the regular presenter is on the screen. This could explain why the interpreted sign language content is given a more prominent position than the broadcast content. Based on the findings from sections 2 and 3, section 4 offers a series of recommendations for the inclusion of SLI on TV broadcasts. Finally (section 5), discussion and conclusions are presented.

#### Data collection from broadcasters across 42 countries

The first stage of the research was to understand which formal features could impact the reception of SLI on TV. To this aim, screen configurations were collected from different international broadcasters, offering an overview of the formal features applied by broadcasters within and outside of the EU. The first data were collected from the online platform Sign Language Television for the Deaf[[1]](#footnote-2). This platform includes different accessible TV programmes from broadcasters in 42 countries. From this website 100 screen shots were retrieved with the aim to classify the many features and formats used when presenting sign-interpreted programmes on TV (Redón, 2014). The Redón (ibid) data were analysed further, taking into account some of the common variable formal parameters and features previously described in the literature (Gil-Sabroso & Utray, 2016; Kyle, Reilly, Allsop, Clark & Dury 2005; Van der Graaf & Van der Ham, 2003). The selected parameters were: interpreter gender (Table 1), on-screen video production composition (Table 2), shot size (Table 3), interpreter clothing colour (Table 4), interpreter on-screen size[[2]](#footnote-3) (Table 5), interpreter location on the screen (Table 6). Tables 1 - 6 present the different features analysed for each of the formal.

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| --- | --- |
| Table 1.*On-screen video production composition* | |
| Picture-in-picture box | 49% |
| Split screen | 27% |
| Chroma | 24% |

|  |  |
| --- | --- |
| Table 2.*Shot size* | |
| Long shot (LS) | 30% |
| Medium long shot (MLS) | 7% |
| Mid shot (MS) | 49% |
| Medium close-up (MCU) | 14% |

|  |  |
| --- | --- |
| Table 3.*Interpreter’s clothing colour* | |
| Plain light-colour | 14% |
| Plain dark-colour | 62% |
| Patterned | 24% |

|  |  |
| --- | --- |
| Table 4.*Interpreter’s on-screen size* | |
| Small | 24% |
| Medium | 44% |
| Big | 32% |

|  |  |  |  |
| --- | --- | --- | --- |
| Table 5.*Interpreter’s location on the screen* | | | |
|  | Bottom | Centre | Top |
| Right | 40% | 21% | 3% |
| Left | 17% | 19% | 0% |

Table 1-5. Formal features from 100 screen configurations including SLI from 42 broadcasters

The collected data analysis shows a great deal of variation among different broadcasters. It also shows an incongruity between the majority of screen configurations, and the user preferred option as shown in Image 1. From the data collected in Redón (*ibid.*) the stereotyped format of SLI is: a female interpreter, wearing plain dark-colour clothes, filmed using a mid-shot and inserted on the screen within a medium-sized sub-screen on a bottom right location. Image 2 illustrates this common format.



Image 2. Common format of SLI on TV derived from the data analysed

The common composition (Image 2) versus the preferred composition (Image 1) differ largely. These differences affect the prominence of the interpreter in both relative size and the on-screen video production composition. The most common format shows a medium size window inserted using picture-in-picture technology, including a medium-sized mid-shot interpreter, either side-by-side or overlaying on the news content. This contrasts with the preferred user format: a prominent interpreter in a foreground position inserted in a layer in front of the broadcast news content, with mid-long shot, occupying a third of the screen width (DTV4ALL, 2008; Kyle, 2007; Whermeyer, 2014).

Variation in formats is not only found among broadcasters from different countries within and outside the EU (EBU, 2016) but also sometimes within the same broadcaster. A second data collection process was designed in order to discuss the observed variation and understand which of the described formal parameters and features are perceived to affect legibility of the SLI on the screen the most. Information was gathered from two groups directly involved in sign language production and reception on TV: sign language interpreting professionals who currently work or have worked on TV and signing deaf people. For each group a different qualitative data collection method was designed and developed.

#### Collecting data from service providers: TV sign language interpreters

Sign language communities are a minority group. They include not only signing deaf people but also their families and the professionals who take an active role in their cultural and linguistic daily life (De Meulder, Krausneker, Turner & Conama, 2018; Harris, Holmes, & Mertens, 2009). Before SLI studies became part of mainstream education programmes, sign language interpreters were normally signing hearing children of deaf parents. Even today some professionals are CODAs (Children of Deaf Adults) or their relatives (Bontempo, 2015). In Catalonia (7.5 million citizens) there are some 25,000 Catalan Sign Language (*Llengua de Signes Catalana*, LSC) users, out of which 6,000 are deaf or deafblind (Cabeza & Porteiro, 2010).

**3.1. Professional interpreters interviews: Method**

We interviewed TV sign language interpreters to collect qualitative data. Sign language interpreters can both provide professional first-hand information and report specific feedback from their Deaf consumers. This method was selected to allow an interaction with the professionals on the pre-selected format features.

***3.1.1. Participants***

Currently there are ten professional TV sign language interpreters in Catalonia working for both local and national broadcasters. These ten professionals were contacted through the Association of Sign Language Interpreters and Guide-Interpreters of Catalonia[[3]](#footnote-4), (*Associació d'Intèrprets de Llengua de Signes i Guies-Intèrpret de Catalunya*, ACILS), and the Catalan Federation of Deaf People[[4]](#footnote-5) (*Federació de Persones Sordes de Catalunya*, FESOCA). All potential participants were contacted either by phone or email.

Finally, a total of 12 professionals agreed to participate in the research, including nine active professionals and three professionals no longer working for TV (9 female and 3 male). The mean age of the participants was 38 (ages raging from 30 to 46). All participants were certified interpreters. The six participants qualified after 2000 had the level 5 diploma on sign language interpreting and guide-interpreting. The other six participants had other qualifications and accreditations (four of them were CODA). All the interpreters had at least 3 years of work experience on the TV. On average, interpreters had 4 years of prior professional experience in different settings, other than TV.

***3.1.2. Materials***

During the interview a personal computer was used to take notes and display a selection of screenshots collected from the online platform Sign Language Television for the Deaf. The semi-structured interviews were designed in five sections: 1) personal and professional information, 2) professional experience with TV interpreting, 3) on-screen insertion formal features (including screen-shots when available), 4) feedback from Deaf consumers regarding on-screen insertion formal features, and 5) open questions about other professional and formal aspects not asked in previous sections. Sections 1 to 4 consisted of a series of pre-determined, open-response questions that all interviewees answered in the same order.

***3.1.3. Procedures***

Prior to the interviews, a written questionnaire including the demographic information and outline of the pre-determined sections of the interview was sent to all participants. Respondents were asked to send screen-shots of their professional work in TV interpreting, if available. The preferred method of carrying out the interviews was face to face. Interviews were held in both public and private locations according to the interviewees’ preferences to facilitate participation. Due to geographic distance and personal availability, two interviews were conducted via phone call and one via video call. Due to time constraints one phone call participant did not finish all 5 sections. They were completed a few days later and sent via email. The interviews lasted from one to up to three hours. No participant was excluded.

All interviews started with sections 1 to 4. In section 3, if the professionals could not provide a screen-shot of their own on-screen insertion configuration, they were asked to describe it, paying special attention to all the formal features. After the interview participants browsed the different screenshots collected from the online platform Sign Language Television for the Deaf. This was aimed to elicit further comments on formal features of SLI insertion. After the interview, the notes were sent via email to each participant to check its content. The implementation of this in-depth, qualitative research was spread over two months.

**3.2. Professional interpreters interviews: Results**

Interview results show that according to interpreters, both professional and signing deaf, the most important on-screen formal feature is size —provided that other more basic technical requirements are met (i.e. lighting techniques). Sign language on-screen size mainly depends on two formal features: sub-screen size and shot size. Although some broadcasters have an online feedback service, suggestions and complaint forms are rarely used. According to the public Catalan broadcaster CCMA Accessibility and Audience Feedback Services, only 6 people contacted asking about the sign language service between 2015 and 2018 and none made reference to formal requirements (CCMA, personal communication, April 2, 2019). Frequently, deaf TV consumers address their feedback through direct contact with the TV sign language interpreters via personal and informal ways. This information was one of the results from the interviews. When discussing user feedback, interpreters mention that deaf consumers mostly complain about the sub-screen size being too small. Whenever changes are introduced, i.e. a bigger on-screen appearance, user feedback is always positive. Interpreters also note that shot size also influences the overall size perception. Feedback from the consumers point to a medium long shot as the preferred format. That is just a bit shorter than a knee shot, with some space above the head to allow signs in that region to be clearly seen.

However, interpreters working on TV sometimes need to adapt. When the sub-screen is too small interpreters ask cameramen for a shorter shot so the hand-size on screen is relatively bigger. Even though using a mid-shot imposes restrictions on the language signing space, it is always preferred to having a longer shot because it makes hand size look even smaller. During the interviews, interpreters mentioned that they always tackle these technical issues during their TV assignments, while broadcasters are generally unaware of them.

Background colour was the second on-screen preferred formal feature, and the feedback varies greatly. Reported colours went from plain white to grey, orange, all shades of blues and black, or even dotted or patterned backgrounds. This formal variation is due to aesthetic criteria to match or contrast with the general on-screen composition for a given TV programme. SL legibility on-screen partly depends on the colour contrast between the background and the interpreter skin and clothing colour. Colour combination contributes to the attractiveness and the visibility of the language presentation (World Wide Web Consortium [W3C], 2016). The interpreters also reported that service users mention that background colour not only affects legibility but also eye fatigue. SL interpreters in Catalonia tend to wear dark plain clothes, and in formal assignments black colour is always preferred over alternatives. All interpreters currently working on TV said they wear black clothes and mentioned that users tend to accept this as part of their uniform. Most users complaining about colour contrast would rather change the background colour than the clothing colour.

The last formal feature is speed. This feature was not in our original list, but was brought up by professionals in their interviews as one of the most influencing factors to ensure communication. Most TV interpreters work on news programmes and speech rate tends to be higher than normal speech rate. According to Serrat-Manén (2011) CCMA news interpreted into sign language show a rate of 2.8 words per second. This result is very high compared to signing news produced by deaf people at Gallaudet university in Washington DC. Professionals found difficult to convey every single word. Common interpreting strategies to compensate high-speed rate are to paraphrase, compress or omit some information such as transitions between news or greetings (see Isal, 2015 for an analysis on the sports news in the Catalan broadcaster). Also reported by interpreters are the reading difficulties when finger-spelling names, especially for uncommon longer names in foreign languages. An interesting solution reported was to buffer TV reception to allow for personalised speed. It is worth mentioning that apart from a few exceptions: all TV interpreters have worked in news broadcasting, and only three in other TV genres. One had also worked on a children programme at CCMA and the two Catalan professionals working for the Spanish commercial TV channel *La Sexta* have also interpreted some films.

Both interpreters at *La Sexta* also mentioned negative feedback from deaf users about the interaction between subtitles and the interpreter sub-screen. In *La Sexta* subtitling, interpreting, and the digital on-screen graphics share the same bottom of the screen-area. From time to time these different layers of information overlap. Consumers suggested that interpreting and subtitles should not be at the same on-screen level.

There was general agreement that the most frequent end-user feedback is on language features and content rather than on formal requirements. A common occurrence for interpreters is to be contacted about the use of regional dialectal signs or neologisms; also regarding the general linguistic skills and performance of the interpreter (either to praise it or to suggest improvements).

#### Collecting data from service users: signing deaf TV consumers

According to the European Broadcasting Union (EBU) report on accessibility services, public European broadcasters deliver sign language on 4% of programmes on average (EBU, 2016; ERGA, 2016). Although sign languages are under-represented in mainstream media, deaf signers are expert users on TV accessibility services and have an opinion. To determine key formal features and their hierarchy, it is important to gather their views. To this aim a focus group was designed as the primary qualitative data collection method.

**4.1. Focus group with deaf users: Method**

In order to raise interest in the topic within the Catalan Sign Language Community, we contacted the National Federation of Deaf People of Catalonia (FESOCA). Contacts were also made by participating in the 5th Catalan Sign Language Seminar, which is a social and scientific event organised especially for LSC teachers and other members of the Sign Language Community in Catalonia. In this event we were invited to give a 40-minute presentation about the HBB4ALL project. After the presentation, many deaf people showed interest and were willing to share their opinions with us. We also recorded a recruitment video message in LSC asking for collaboration in a focus group to discuss the on-screen sign language formal features. FESOCA sent the video message to all the local associations, the majority of signing deaf people associations in Catalonia. The local associations then forwarded the information to their members.

***4.1.1. Participants***

The recruitment video message had 184 views and a total of 13 users contacted to participate. A total of 8 participants took part across the 2 sessions, (7 female and 1 male). The participant median age was 43. The first session grouped older deaf people (with a participant median age of 63, ages ranging 50-72) whereas the second gathered younger users (with a participant median age of 23, ages ranging 22-38). This distribution was accidental, as users chose either session voluntarily.

All participants were deaf people from the Barcelona region, and part of the Sign Language Community. They all had either or both attended a deaf education center and were active members of a local deaf association. All were profoundly deaf, either congenitally deaf or deaf before the age of 3. They all reported LSC as their first language. Three of the participants were born to signing deaf families and 5 were born to hearing families, one of which reported to use sign language within the family occasionally.

In regard to TV and access services habits, they all reported having consumed both subtitled and interpreted TV contents when available. All but one of the participants mentioned they like to use both access services. 3 participants reported to have watched interpreted contents during the past 24 hours prior to the focus group session.

***4.1.2. Materials***

The focus groups were conducted in a meeting room in Casa del Mar, a public venue close to a deaf high school in Barcelona used to host Catalan Sign Language Community events. The room was equipped with an overhead projector, a screen and a desktop computer. During the focus groups session different screenshots and video clips were displayed showing different screen formats and on-screen compositions.

The 4 participants were placed at two different tables in a V-shape facing the screen and the interviewer. Three different cameras were used simultaneously to record the session. Apart from the researcher two other people were present: a research assistant and cameraperson, both fluent signers. Three written forms were administered: an informed consent form, an image release form, and a questionnaire. To fill in the relevant forms and complete the last task of the session there were pens, paper, coloured pencils, and crayons. The questionnaire had two parts: the first part was designed to collect demographic information including hearing status, language use and social participation in the Sign Language Community. The second part of the questionnaire gathered information about the habits of the participants as TV and accessibility service consumers.

***4.1.3. Procedure***

LSC was the language of communication throughout the focus group discussion. At the beginning of the session the participants were welcomed and informed about the procedure and expected duration of the session. The three written information and consent forms were handed out. Both the researcher and the sign language research assistant helped to translate and answered questions about the content of the forms when needed. The focus groups aimed at discussing all the formal features of on-screen interpreting previously described in the initial data collection phase (see section 2) and those discussed on the interviews with the SLI professionals (see section 3). Results from the interviews were the starting point for the group discussion.

After gathering all the filled in forms, the group discussion began. From the beginning of the sessions it was stressed that the goal of the focus group was to discuss the formal features affecting sign-interpreted broadcasts, as opposed to discussing the interpreting skills and language skills of the SLI professionals.

Both focus group sessions followed a structured outline and made use of the same input materials. The session was organised in seven sections designed to provoke discussion on two topics: the formal features of SLI insertion on broadcast news, and different TV programme genres.

To focus the discussion, previous research within the HBB4ALL project was presented. All the analysed features of SLI on-screen observed in the first data collection process were summarised. Then 4 video clips (approximately 10 seconds each) were shown to illustrate different on-screen interpreting by the Catalan or Spanish broadcasters. The third section introduced the results from the interpreter interviews. The following sections aimed to introduce other formal features not previously discussed and not analysed with the previous data collection methods. To wrap up this first part of the session, ten screen shots showing a wide variety of formal characteristics of SLI on-screen were selected and displayed. They illustrated several compositions of the shown formal features and elicited new feature discussion. The participants were encouraged to add more formal features not previously described. The final section was oriented towards rating the formal features most and least important for accessibility. To close the session participants were asked to draw two TV screens on DIN-A4 white paper and depict the best and the worst screen compositions.

After each session we took notes to summarise the main issues discussed. The videos recorded during the sessions were edited to show all participants simultaneously using picture-in-picture. The relevant parts of the videos were transcribed using glosses for further analysis.

**4.1. Focus group with deaf users: Results**

The results from the focus groups with the end-users are consistent with the feedback reported by the interpreters. The most important on-screen feature to grant accessibility was considered by all participants to be the size of the interpreter. Most agreed that approximately a third of a vertically split screen and use of MS/MLS would be best. Participants also agreed that different types of TV genres should present sign language interpreters using different configurations and formal features. They acknowledged that the only interpreted TV programme that they could access regularly in LSC was news broadcast, and they would need more experience and time to find the best configuration for each TV genre. Regarding size, for example, most mentioned that for films or TV series they would prefer a smaller interpreter. They also mentioned the possibility of adjusting clothes and colours according to the target audience and content. Some suggested that for interviews, or some reality shows, more than one interpreter could be used in different parts of the screen to match speaker location.

Deaf users also considered colour contrast to be one of the most important features. However, they did consider the possibility of interpreters wearing colours other than black, as a way to prevent eye-fatigue and provide colour contrast. The participants also mentioned the need to be consistent in the future if colours and the interpreter dress code matched the type of programs and their targeted audience. The suggested colours for the interpreter clothing showed a wide range of preferences including: light, dark, bright, and the classic black. They all seemed to prefer plain colours with no patterns. There was no consensus regarding the background colour beyond contrast with clothing and skin colour. This was suggested to highlight linguistic details and to prevent eye-fatigue. Regarding colour contrast and the screen composition, most participants considered that embedding the interpreter in a framed sub-screen, rather than using chroma was a better way to guarantee contrast. Some participants mentioned that the contrast between the interpreter sub-screen and the screen should also be considered.

Deaf consumers also discussed the overlaying (or even overlapping) of subtitling and the digital on-screen graphic with interpreting on the screen. They all agreed overlapping should be avoided. Given the subtitles bottom screen display most participants agreed to place in a central position the sign language sub-screen. However, there was no consensus regarding the right/left location. However, participants agreed that the position parameter affected the overall screen readability. Interestingly, some said it was more comfortable to start by viewing the sign language on the right and then continue reading the subtitles whereas others argued the opposite.

When asked about the signing speed, most did not feel it was a feature that could be altered and would not elaborate further on this. They seemed to accept that news is delivered at a rapid pace of speech and that it is the interpreter’s job to keep up with it, regardless of the challenges posed. They did point out that having the option to slow down the speed would make the content accessible for more people.

All the other features such as: gender, age, appearance or position, were considered irrelevant to accessibility. However, the groups agreed that certain aesthetics are important to appear on TV and always stressed the importance of interpreting skills, and cultural background. Further results and comments that arose during the focus group sessions are included in the next section as recommendations.

#### Recommended features for sign language interpreting broadcasting on TV

###### In addition to the commonly agreed criteria mentioned in sections 3.2 and 4.2, in both sets of interviews additional criteria were proposed. The provisional recommendations for SLI broadcast we suggest in this section encompass our findings from the qualitative studies with previous guidelines for including a sign language in the video stream or in other multimedia content access services (for guidelines on TV see Centro de Normalización de la Lengua de Signos Española, (CNLSE), 2017; ITC, 2010; ITU, 2014b; NDA, 2014; Ofcom, 2015; for web-accessibility metrics see W3C, 2016; for signing video books see Pyfers, 2000; for video interpreting see Ryan & Skinner, 2015; and for hardware and software see Oliver, Martín & Utray, 2009). Finally, the recommendations on size and position of the interpreter on the screen are partially supported by the results from experimental tests using eye-tracking and recall measures (Bosch-Baliarda, Soler & Orero, forthcoming)~~.~~

**5.1. Signer Filming**

Lighting is crucial for sign language articulators to be clearly seen with no shadows or dark parts on or around the signer. It is especially important to control the signing space, the shot size and the eye-line. The signing space is the area in front of the signer, and is used to articulate all the signs. This is very important because sign language is a three-dimensional language using different active articulators: in the head, torso and arms including face, lips, tongue and eyes, shoulders and arms, hands and fingers (Pyfers, 2000). All these body articulators should be in shot at all times. Another important issue is that the signing space may vary from language to language, signer to signer, or even within different registers.

When filming the signer:

a. Check the lighting

b. When framing the shot: check the size of the signing space with the signer

c. Use a medium long shot to film the signer

d. When framing the signer: leave some room above the signer’s head and on both sides

e. Use an eye-level camera angle with the signers’ head at the level of the focus

f. Use a frontal or a semi-profile shot

g. Maintain the shot

Additionally:

h. Avoid shadows on or around the signer

i. Avoid long shots or close-ups

j. Avoid cut-offs

k. Avoid using different shot sizes

l. Avoid high and low camera angles

**5.2. Interaction with the visuals and screen layout**

Sign language on-screen implies the presentation of a visual language on visual media. One of the key concepts to bear in mind is split or divided attention. Deaf signers need to attend to both the signed input and the visual media, broadcasting visual content. Not only promoting positive interaction with the on-screen visual information but also, avoiding negative interaction is fundamental to screen readability. The signer creates a positive interaction when relating the signing discourse to the visual information on screen. This is performed by pointing to the visuals or incorporating the visual properties of the objects on the screen into the signed discourse. On the other hand, negative interaction is created whenever blockages or obstructions occur. On some occasions, visual information blocks the signer, such as: digital on-screen graphics, on screen texts or subtitles. A fundamental requirement is to not obstruct the interpreter facial expressions or the hand-shapes. On other occasions, it is the signer who blocks, completely or partially, other on-screen visual information.

When designing the screen composition:

a. Facilitate positive interaction between the signer and the on-screen visual information

b. Provide the interpreter with all additional visual information prior to the interpreting/translation service (i.e. clips, graphics, tables)

c. Let the signer know where the visual information will appear on the screen prior to the interpreting/translation service (i.e. presenters, interviewers/interviewees, clips, graphics, tables)

d. Allow time to attend to all the visual information on the screen

Additionally:

e. Avoid any visual, on-screen information blocking the signer

f. Avoid the signer blocking any of the visual information on the screen

g. Avoid overlapping of the signers "box", when using picture-in-picture or chroma key technology

**5.3. Colour combination**

Colour contrast and combination are important to grant accessibility of sign language on screen. Three different aspects can impact colour interactions: background colour, the colour of the signer’s clothes, and the signer skin colour. The colour combination can affect perception, legibility, and thus accessibility. Negative colour interactions can produce eye fatigue. Colour contrast and combinations have an even greater impact on accessibility for deaf-blind users. Deaf-blind people who typically use sign language services are congenitally deaf people who have acquired blindness later on in life; often they are not completely blind but have low vision, different eye conditions or are partially sighted.

Regarding colours:

a. Provide the signer with clothes that contrast with their skin colour

b. Provide the signer with one-colour plain clothes with no patterns

c. Use a plain, patternless background for the signer that contrasts with the signers skin

d. Use a dark blue plain background to grant accessibility to the deaf-blind users

Additionally:

e. Avoid multi-coloured or patterned clothes

f. Avoid multi-coloured or patterned background

g. Avoid dark spots or shadows on or around the signer

**5.4. Shape and size of the sign language on screen**

Deaf signers normally mention the size of the signer to be the most important feature affecting legibility. It is important for older and deaf-blind users. The size and shape of the signer also reflect and affect the language status on broadcast media. The recommended minimum size established in earlier guidelines for picture-in-picture interpreters was at least one-sixth of the picture area, roughly 1/3 of the width screen, based mostly on news broadcast (ITC, 2010; Ofcom, 2015). However, this might not be optimal for other TV genres (Bosch-Baliarda, Soler-Vilageliu & Orero, forthcoming).

Regarding size and shape:

a. Present a "human-sized" signer

b. Use a rectangular-shaped signer box, when using picture-in-picture technology

c. Provide a box at least 1/4 of the width of the screen

Additionally:

d. Avoid miniaturised signers

e. Avoid using circular or egg-shaped boxes when using picture-in-picture technology

**5.5. Position of the sign language on screen**

When discussing the on-screen position there are left and right, and top, central, and bottom positions. The most common is bottom-right. However, it seems there could be cultural differences or learning effects regarding side preferences. Whereas British (Ofcom, 2015), Spanish (Gil-Sabroso & Utray, 2016) and German signers (HBB4ALL, 2017) prefer the signer on the right side, Catalan deaf signers did not show a clear preference for left/right positions. Similarly, Van der Graaf & Van der Ham (2003) showed that Dutch signers preferred a right position (coinciding with the common broadcast format) but considered left positions appropriate too. Results from experimental reception tests indicate that left position might enhance overall readability (Bosch-Baliarda, Soler-Vilageliu & Orero, forthcoming).

On the vertical axis, central positions seem to facilitate reading the different visuals on the screen and to allow positive interaction with the subtitles. Position choice made by broadcasters is dictated by design criteria rather than accessibility criteria.

News broadcasts is the genre commonly chosen by broadcasters for signing services. Screen composition for news broadcasting includes the visual information, the hearing presenter and the sign language presenter or interpreter. Eye-tracking studies have shown deaf people do not observe the hearing presenter (Gutermuth, 2011; Wehrmeyer, 2013; 2014). Rather they concentrate their attention on the signer and sometimes attend to the main visual information on the screen.

Regarding the screen position:

a. Use a central position of the screen to present the sign language

b. Contact your national association of the deaf to know if they have a preferred position.

c. Choose preferably a left position and use it throughout your broadcast programs

d. Place the visuals between the signer and the news presenter

Additionally:

e. Avoid top and bottom positions

f. Avoid using different position configurations for different programs

g. Avoid placing the news presenter between the visual information and the signer

**5.6. Recruitment of sign language professionals**

Broadcasters should employ qualified interpreters. It is important that broadcasters hire experienced interpreters, who have worked in a variety of interpreting settings, and have been exposed to different sign language users, so they can adjust to a wide range of registers, according to the programs and target audiences. Moreover, media interpreters need to be highly skilled interpreters. They should have native-command of the national sign language of the country and they should also have an updated knowledge of neologisms and terminology of current events.

Media interpreters should be highly skilled in their linguistic abilities, and also in their interpreting skills and strategies. They have to be suitably trained for TV interpreting, that is, they should be familiar with using a teleprompter, signing in front of the camera and having no feedback from users. These are some characteristics that novice interpreters might not be familiar with.

Recruiting sign language interpreters (including both deaf and hearing):

a. Contact the national association to learn about the sign language qualifications and training in your country

b. Hire only qualified, accredited or registered interpreters

c. Hire signers with native-command of their national sign language(s)

d. Hire experienced interpreters

e. Hire highly skilled interpreters

f. Offer training for signers and interpreters (media technologies)

g. Always ask for expert advice when casting or recruiting new signers/interpreters always ask for expert advice

Additionally, you should:

h. Avoid hiring novice interpreters

i. Avoid hiring untrained or unqualified signers

**5.7. Preparation time and materials**

Service preparation time is crucial to grant interpreting quality in the visual media. The interpreter should have time prior to the actual interpretation in order to prepare the service. During this preparation time, the visual materials should be provided: the script, the step outline and/or the video clips that will be used in the program. Sign language is a visual language and the interpreter should interact positively with the visual media.

Before the sign language interpreting/translation service:

a. Provide all the audio-visual materials (clips, graphics, etc.)

b. Provide the script or step-outline

c. Allow sufficient time for preparation

Additionally:

d. Avoid introducing new visual materials without letting the signer know

e. Avoid hiring the signer only for the time of the service

#### Discussion and conclusion

Our findings suggest that both target groups consider size of the signer and signing speed the two most important formal features determining accessibility. These findings are consistent with previous research for other sign languages. For sign language users size and speed are as important as the language contents, interpreters language skills, and interpreting skills (Steiner, 1998; Wehrmeyer, 2014; Xiao & Li, 2013 as cited in Wehrmeyer, 2014). Findings from the focus groups also suggest that the minimum size of the interpreter or the interpreter box should be at least one-fourth of the total screen width regardless of the TV genre. This finding suggests a relatively big SLI. Previous guidelines suggested a minimum size of at least one-sixth of the picture area and were mainly based on news broadcasts (ITC, 2010, Ofcom, 2017). However, deaf SLI service users agreed that bigger configurations such as those described as the preferred deployment in earlier literature would be appropriate for news broadcasts but not for other programme genres (as reported in section 4.1).

Another finding in our study is that miniaturised interpreters not only affect accessibility but also the language social status. Broadcasting small interpreters might have a negative impact on the TV providers reputation within the Sign Language Community. Deaf signing TV consumers seem to assume that deploying miniaturised signed content is a strategy used by broadcasters to comply with accessibility policies without providing actual access. Hence, customisation of size seems to be one of the formal parameters to be prioritised in future deployments.

Regarding the position of the interpreter or the interpreter box on the screen, our findings show a greater variation. Previous literature suggests that users preferred a right-hand-side position (DTV4ALL, 2008; Gil-Sabroso & Utray, 2016; Kyle, 2007; Ofcom, 2015; Van der Graaf & Van der Ham, 2003; Whermeyer, 2014). However, the results from the focus groups show that users either preferred a left position or considered a right/left configurations to not impact on the accessibility of the service. However, the experimental tests using eye-tracking and memory measures indicate that there are significantly better results with screen configuration designs presenting the interpreter on the left with a medium size (Bosch-Baliarda, Soler-Vilageliu & Orero, forthcoming).

In any case, both individual and cultural differences may exist due to a learning effect. Since the Catalan national broadcaster is currently deploying this access service using a left-central, on-screen position. Catalan deaf signers may have been influenced by their TV consumption habits. This contrasts with the interpreted content broadcasts in Spanish Sign Language or LSE (also available to Catalan deaf signers): According to Gil-Sabroso & Utray (2016), 90% of the interpreted broadcasts in LSE are implement a bottom-right location. Regarding the vertical position, users also commented that they preferred a more central position to avoid negative interaction with the subtitles. Although studying the interaction between access services, subtitling and signing was clearly not our goal, we detected that deaf users exploit both services in many different ways according to availability, literacy skills, type of programme genre and personal preferences (Bernabé & Orero, 2019; Gaerts, Cesar & Bulterman, 2008; Kurz & Mikulasek, 2004).

In a similar unforeseen way, participants in both sets of interviews and focus groups pointed out that broadcasters deploying sign-interpreted contents tend not to have sufficient knowledge about the Sign Language Community as a language minority. According to the participants, some broadcasters still think that subtitling can grant full accessibility to all deaf people, regardless of their primary language of communication and thus think that SLI provision is redundant or unnecessary (see Neves, 2007 for a discussion on the divide between subtitling and sign language on TV). Additionally, lack of awareness of the sign language modality particularities sometimes leads to misconceptions and prejudices that can affect sign language representation on the screen. More specifically, interpreters report that broadcasters are not familiar with the professional role of the SLI or the existing technical guidelines to broadcast SLI. This unawareness can impact negatively on the service quality and might explain why this access service is still not widely deployed.

The results of our research are preliminary. This first testing and state of the art was a first step towards further testing regarding preferences of sign language interpreting and its TV presentation. The main limitation of our findings is the number of participants. As with most research in Media Accessibility (Orero et al., 2018) the number of testers is quite low and this article is no exception. If number of test participants is low in languages such as English or Spanish, the situation gets harder when dealing with a minority language such as Catalan Sign Language of a minority language: Catalan. The Catalan sign language users constitute a language minority within a minority that of the deaf and hard-of-hearing populations in Catalonia. Our tentative recommendations should be further validated by more experimental research methods as the ones conducted for size and position.

Given the new possibilities for customisation when consuming media on TV with accessibility services (Mas & Orero, 2018) there is scope to research, for example preferences for sign language presentations for the many TV genres, formal features implementation or service interactions. We are at an important time since legislation, research and technology are joining towards guaranteeing equal access to media. The social and personal inclusion rights should be equal across groups of disabilities, and that includes: deaf TV consumers who are Sign Language Community members.

#### Bionotes

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1. <http://signlangtv.org/> [↑](#footnote-ref-2)
2. The features small/medium/big used for the size parameter correspond to

   * small size: less than 1/4 of the screen width;
   * medium size: between 1/4 and 1/3 of the screen width;
   * big size: more than 1/3 of the screen width.

   [↑](#footnote-ref-3)
3. [www.acils.org](http://www.acils.org) [↑](#footnote-ref-4)
4. [www.fesoca.org](http://www.fesoca.org) [↑](#footnote-ref-5)