STATE OF THE ART OF SUBTITLES AND SIGN LANGUAGES

SUBSIGN: Subtitling Sign Languages

Erasmus+ Project: 2024-1-IT01-KA210-VET-000246598

Date: 30/07/2025

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SUBtitles

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Grant Agreement No.:
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Introduction

Language is a fundamental component of society, and therefore, an essential aspect of what it means to be human. Whenever a group of individuals lives and interacts together, the need to communicate inevitably leads to the development of a language. According to Ferdinand de Saussure's semiotic theory, language is composed of signs, each consisting of a signifier (the form of a word or sound) and a signified (the concept or object it refers to).

While it is likely that **sign languages** developed alongside spoken languages, their formal recognition, study, and standardisation are relatively recent. Historically, Deaf people were marginalised and often considered incapable of learning. Over the past few centuries, however, thanks to the relentless work of Deaf communities and advocates, their rights and visibility have significantly improved.

Subtitles, by contrast, are a much more recent development. They first emerged during the silent film era as a means to provide audiences with narrative context and dialogue, compensating for the absence of recorded sound. Over time, subtitles evolved into a sophisticated tool for audiovisual translation, now including translations of spoken dialogue and, in the case of Subtitles for the d/Deaf and Hard of Hearing or Closed Captions (SDH/CC), the description of relevant sound effects, speaker identifiers, and music cues.

Today, subtitles play an essential role in how we consume **media**. Data show that a growing number of viewers rely on subtitles to better follow the content, whether for accessibility reasons, improved concentration, or as a replacement for audio altogether. In recent years, sign languages have also begun to appear more frequently in the media. This raises an important question: can existing subtitling theories and practices be effectively applied to sign languages as well?

This is the core objective of the **SUBSIGN project**: to investigate the subtitling of sign languages, exchange knowledge among professionals, and ultimately contribute to the development of a shared set of guidelines for this emerging practice.

During **activities A1.3 and A1.4**, the project team engaged in collaborative exchanges on both subtitles and sign languages, seeking common ground and identifying key areas of overlap and divergence. One of the first tasks was to define

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the potential audiences for sign language subtitles, including Deaf signers, hearing non-signers, sign language learners, and general hearing audiences.

This diversity of **users** - with different backgrounds and accessibility needs - presents a challenge. Subtitlers may choose to strike a balance that partially satisfies all groups, or they may decide to focus on the needs of a specific audience, potentially at the expense of others.

One of the key **outcomes** of these discussions was the recognition that subtitling sign language involves interlinguistic translation - that is, translation between two different languages (e.g. from a sign language to a written spoken language) - as opposed to intralingual translation, which refers to paraphrasing within the same language.

The team also acknowledged that sign languages have unique grammatical structures and ways of expressing meaning, which differ greatly from spoken languages. As a **result**, traditional subtitling strategies, originally developed for spoken language content, may not be adequate or directly applicable. This reinforces the need for specific approaches and guidelines tailored to the linguistic and visual nature of sign languages.

Subtitles

Subtitles are one of the most common forms of audiovisual translation. Traditionally, they are used to convey oral content in written form, often placed at the bottom of the screen. In the case of Subtitles for the d/Deaf and Hard of Hearing (SDH) or Closed Captions (CC), subtitles also include additional information such as speaker identification and non-verbal audio elements like music, ambient sounds, and sound effects relevant to the narrative. The practice of subtitling dates back more than a century, with its origins in silent cinema. Early examples include intertitles or title cards, which appeared between scenes and were used either to present dialogue (dialogue intertitles) or to provide narrative context (expository intertitles). Over time, subtitling has developed its own norms, techniques, and constraints.

It is now defined as “a translation practice that consists of presenting a written text, generally on the lower part of the screen, that endeavours to recount the original dialogue of the speakers, as well as the discursive elements that appear in the image (letters, inserts, graffiti, inscriptions, placards, and the like), and the information that is contained on the soundtrack (songs, voices off)” (Díaz Cintas &

Remael, 2007). Subtitling and dubbing represent the two dominant forms of audiovisual translation, with preference for one or the other often shaped by national traditions, audience expectations, and market demands.

Subtitling practices vary widely across countries and platforms, and depend on factors such as the target audience, the nature of the audiovisual product, and client specifications. Subtitles can be categorised by **format** - as either open (burned into the video) or closed (user-activated) - and by **function**. Functionally, they may be intralingual, used within the same language for purposes such as accessibility (SDH), education, karaoke, dialect representation, or informational support; or interlingual, translating between languages for both hearing and d/Deaf or hard of hearing audiences.

Subtitling is subject to a range of **spatial and temporal constraints** that impact both translation choices and viewer experience. Two key parameters are: Reading speed, measured in Characters Per Second (CPS); Characters per line and lines per subtitle, typically limited to two lines per subtitle, with a maximum number of characters per line usually between 35 and 42, depending on conventions.

To navigate these constraints while preserving the intended meaning, subtitlers often rely on a range of translation **strategies** aimed at balancing accuracy with readability. Techniques such as simplification, rephrasing, or selective omission are frequently applied - especially in SDH subtitling - where reducing reading speed and enhancing clarity is essential for audiences who depend entirely on text to access the content.

Subtitling sign languages, however, poses a very different challenge. Instead of transcribing spoken dialogue, it involves creating written captions for content that was originally conceived and performed in a visual-gestural language. Unlike spoken languages, sign languages use space, body movement, facial expressions, and handshapes to convey meaning, which makes the translation into written language particularly complex and nuanced.

These differences are not just linguistic but also cultural and semiotic. While traditional subtitling has been studied and standardised across the industry, subtitling sign languages is an **emerging practice** with little precedent and limited guidance.

Grant Agreement No.:
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State of the Art – Subtitling Guidelines

Subtitling guidelines are structured sets of norms developed over time to address both linguistic challenges and the specific expectations of viewers. They help ensure consistency, accessibility, and quality in subtitled content, particularly in the context of broadcast and streaming services. As outlined by Jan Pedersen (Pedersen, 2011), these guidelines can be classified into various levels - rules, norms, conventions, and regularities - depending on their degree of rigidity and the consequences of their violation. Some are essential for functionality (e.g. technical rules that, if broken, prevent subtitles from appearing correctly), while others relate more to stylistic preferences and viewer reception.

One of the earliest and most influential documents in the field is the *Code of Good Subtitling Practice* (1998), which established a set of **basic dos and don'ts** and laid the groundwork for many subsequent standards. Since then, research and professional practice have continued to refine and expand subtitling norms, testing their effectiveness and challenging their limits.

In general, **subtitle guidelines** cover a wide range of technical and linguistic aspects, including:

- Duration: Minimum and maximum time a subtitle remains on screen (usually between 1 and 6 seconds)
- Lines: Maximum number of lines per subtitle (typically 2, occasionally 3)
- Characters per line: Often limited to 35–43 characters, depending on platform and language
- Reading speed: Measured in CPS, adjusted to viewer's reading capacity
- Positioning: Where subtitles appear on screen, most commonly centred or left-aligned
- Timing with scene changes: Inclusion of blank frames or precise timing to avoid overlap with cuts
- Segmentation and line breaks: How text is split across lines or subtitles, ideally reflecting syntax and natural phrasing
- Formatting: Font choices, use of italics, punctuation, spacing, numerals, etc.

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These parameters vary slightly across platforms and broadcasters, as shown in the comparative table below, which highlights key differences in the guidelines adopted by RAI (Italy), Slovak Television, Netflix, and SudTitles' internal house style:

	Rai SDH	Slovak TV SDH	Netflix	SudTitles
Duration in seconds (Min-Max)	2 - //	//	0.8 - 7	1 - 6
Characters per line	37	42	42	43
Reading speed	15/20 max	x	20/17	20
Position	Left	Center	Center	Center

As the chart indicates, while most parameters remain relatively consistent - such as characters per line and screen position - the main variation lies in subtitle duration, which is often adapted to platform-specific needs and audience preferences.

Subtitling has become **increasingly widespread** in both traditional and digital media. Recent data show that subtitle use is growing rapidly, particularly among younger audiences. This shift suggests that subtitles are no longer viewed solely as an accessibility tool but also as a mainstream preference for media consumption.

Despite the breadth and sophistication of current subtitling guidelines, they have been designed primarily for spoken languages rendered in written form. Sign languages, however, operate through a completely different modality - visual-gestural rather than oral-auditory - and present unique linguistic, spatial, and cultural features. As such, existing guidelines offer a useful reference point but are not directly applicable to the subtitling of sign languages. **New frameworks and principles** are needed to respond to the specific challenges posed by this form of translation - challenges which will be further explored in the following section.

Sign Languages

According to the Cambridge Dictionary (n.d.), a sign language is "a language that uses hand, face, and body movements rather than spoken words, used between

and with people in the Deaf community." **Sign languages** are a primary means of communication for Deaf individuals, enabling them to express themselves and understand others through a rich visual-gestural modality.

Although sign languages have existed since the dawn of humanity, their **formal recognition and linguistic study** only began in the second half of the twentieth century.

For many years, dominant educational ideologies questioned the intellectual capacity of Deaf individuals and dismissed sign languages as inferior. The oralist approach, which prioritised lip-reading and spoken language, was widely promoted over the manual approach, which embraced the use of sign languages in education. A pivotal moment in this debate occurred at the **1880 Milan Congress**, where sign languages were formally rejected as a method of instruction. In recent decades, sign languages have gained increased recognition as full natural languages, each with its own grammar, lexicon, and cultural significance. They are now officially recognised in numerous countries - Italy, for example, formally recognised LIS (Lingua dei Segni Italiana – Italian Sign Language) in 2021, while Slovakia recognised its sign language (Slovak: Slovenský posunkový jazyk) in 1995. (Národná rada Slovenskej republiky, 1995).

Across Europe, it is estimated that nearly half a million people use a national sign language, and globally, more than 70 million people rely on one of over 300 different sign languages.

Contrary to common belief, sign languages are not universal and are often not mutually intelligible - though some may be historically or structurally related. Linguistically, signs are made up of **five key components** (Nassira, 2009; Branchini & Mantovan 2020) - often referred to as parameters or cheremes, which are roughly analogous to phonemes in spoken languages:

- Handshape: the configuration of the fingers and hand(s)
- Location: where the sign is produced in relation to the body
- Movement: the direction, type, and repetition of motion
- Orientation: the angle or facing of the palm and fingers
- Non-manual features: facial expressions, head movements, and body posture

In addition, many sign languages use **fingerspelling** to represent individual letters from written alphabets, typically for names, places, or concepts without an established sign.

Sign languages are also categorised into **language families**, similar to spoken languages. Notable families include: Franco-American (e.g. French Sign Language - LSF, American Sign Language - ASL, Italian Sign Language - LIS); Germanic (e.g. German Sign Language - DGS, Irish Sign Language - ISL); Arabic Sign Languages, including Levantine Arabic; Others, with further regional and national variations. Among the most widely used sign languages are Indo-Pakistani Sign Language, Chinese Sign Language, and Indonesian Sign Language.

To address cross-linguistic communication between signers of different national sign languages, a pidginised system known as **International Sign (IS)** - formerly Gestuno - was developed following the first World Deaf Congress in 1951. Though not a fully standardised or autonomous language, IS is used in international contexts, such as conferences and events. It is highly iconic and context-dependent, often relying on shared visual cues and gestures to support mutual understanding.

At both national and international levels, **governments, and institutions** are increasingly committed to supporting access for Deaf communities. Frameworks such as the UN Convention on the Rights of Persons with Disabilities, the European Union's Audiovisual Media Services Directive (AVMSD), and the European Accessibility Act all include provisions promoting the use of sign language and SDH in audiovisual content, aiming to ensure equal participation and access to information.

As with spoken languages, sign languages emerge and evolve wherever a Deaf community exists. Their recognition as natural, complex, and fully functional languages continues to advance, reinforcing their role not only in everyday communication but also in education, media, and culture.

Methodologies and Concluding Remarks

This **report**, developed as part of Activities A1.3 and A1.4 of the SUBSIGN project, represents a crucial initial step in building a shared foundation for future work. These activities were dedicated to a collaborative exchange of knowledge and practices among project partners, with the aim of defining the conceptual and operational framework for subtitling sign languages. Through structured discussions, hands-on experimentation, and interdisciplinary dialogue, the team has mapped out the state of the art in current subtitling practices, critically examined the distinctive linguistic features of sign languages, and identified the inherent limitations of existing audiovisual translation (AVT) guidelines when applied to this emerging and underexplored field.

Our findings and reflections are the result of a series of structured in-person and remote meetings, where team members from different professional and academic backgrounds came together to share their expertise. These exchanges formed the **methodological backbone** of our initial phase, helping us frame the challenges of subtitling sign languages not merely as a technical issue but as a complex intercultural and intermodal translation task that sits at the intersection of accessibility, linguistics, and digital media.

Pilot activities, including test subtitling exercises and cross-partner discussions, revealed several critical issues:

- Fingerspelling, commonly used in sign languages to spell out names and terms without existing signs, significantly increases the length of the corresponding subtitle, potentially exceeding the standard duration constraints.
- Conversely, some signs convey meaning more concisely than spoken language, which can result in subtitles that are too short, thereby increasing reading speed and reducing readability.
- In certain cases, signs are visually lengthy compared to their written translations, making timing and segmentation especially challenging.

These **findings** confirmed that conventional subtitle guidelines - designed for oral-to-written translation - are not directly transferable to sign language content without substantial adaptation. This is due to the visual-spatial nature of sign languages, their grammar, and their multimodal elements, such as facial expressions and spatial orientation, which do not have immediate written equivalents.

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In conclusion, sign language subtitling remains an **underexplored but essential area** in the field of audiovisual accessibility. Its development requires a profound shift in how we think about translation - not only between languages but also between modalities. Through SUBSIGN, we aim to build a framework that is not only linguistically and technically sound but also inclusive, sustainable, and forward-looking.

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