# TOOLS FOR INTERPRETERS: THE CHALLENGES THAT LIE AHEAD

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## Abstract

This paper intends to outline the state of the art of language tools applied to interpreting and discusses the challenges and new opportunities ahead. Unlike translators, interpreters have rarely benefited from language technologies and tools to make their work more efficient. However, nowadays there are some tools and resources already available. Computer-assisted interpreting (CAI) represents a significant new trend for the profession. While CAI tools will definitely reshape interpreters' work conditions, new skills for the related job profiles will also bring dramatic changes to the training agenda.

Keywords: interpreting, tools and resources, interpreting technology, job profile, training agenda.

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# 1. INTRODUCTION

Just equipped with the power of words, over the years translators and interpreters have practiced their work on a daily basis. Both have relied heavily on dictionaries, glossaries, term spreadsheets and the like. Later on, e-resources and language technologies became translators' best friends.

Nowadays, language technologies play a fundamental role in translators' workflows. Tech-savviness is no longer a rare asset, but the industry is already looking for new profiles, i.e. translators who are also qualified information technology experts and/or fulfill the requirements of new job profiles (e.g. post-editing). As Bowker and Corpas Pastor (2015) say: "In today's market, the use of technology by translators is no longer a luxury but a necessity if they are to meet rising market demands for the quick delivery of high-quality texts in many languages."

Translators use a wide range of electronic tools and resources (including corpora) that help them carry out various translation-related tasks, as well as CAT tools proper (translation memories, machine translation systems, localisation tools, etc.), either standalone or bundled into a tool suite.

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Some individual tools are more automated, more expensive and require a steeper learning curve than others. Those are determining factors that explain translators' different habits, trends and degrees of technology uptake (cf. Zaretskaya et al., 2018).

Interpreters, by contrast, have rarely benefited from language technologies and tools to make their work more efficient (Costa, Corpas Pastor and Durán Muñoz, 2014). In fact, interpreters' work still relies by and large on traditional or manual methods, and the technological advances in interpreting have been extremely slow.[1]

Although most interpreters are unaware of interpreting technologies or are reluctant to use them (Corpas Pastor and Fern, 2016), there are some tools and resources already available (Sandrelli, 2015, Fantinuolli, 2018). In addition, there are several interpreting systems that enable virtualisation of the whole process or automation of the outcome. In the words of Aiken, Park and Balan (2010a: 132): "we believe completely automated speech-to-speech interpretation can be provided through mobile devices in many languages, unlimited by topic area, with off-the-shelf software."

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[1] By way of illustration, in the comprehensive *Routledge Encyclopedia of Interpreting Studies*, edited by Franz Pöchhacker (2015), technology is almost absent.

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In the following sections we will introduce a tentative catalogue of existing language tools, explore the technology needs and practices of human interpreters and consider the automation of interpreting solutions. The concluding section will shed some light on the new trends and developments within the emerging field of computer-assisted interpreting.

## 2. DEVELOPMENTS IN INTERPRETING TECHNOLOGIES

Most current technological advances in interpreting differ so much from interpreters' work practice that they are perceived as irrelevant or useless. Major concerns are the loss of quality and the dehumanisation of interpreting that allegedly tend to accompany technological developments (Jourdenais and Mikkelson, 2015). However, there is a growing interest for language technologies and digital resources in the field of interpreting. In the latest AIIC Interpreters for Interpreters Workshop (Bonn, 15 September 2017) there were some papers on collaborative terminology management systems and new software for preparing for and follow-up of interpreting assignments[2]. Similarly, the latest edition of the well-established Conference

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[2] https://aiic.de/event/8-dolmetscher-fuer-dolmetscher-workshop/.

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Translating and the Computer (TC39), organised by AsLing in London (2017), had a special emphasis on technology tools for interpreters. In the Panel discussion on New Frontiers in Interpreting Technology[3], active interpreters of international renown emphasised the need to develop new and improved tools and resources for interpreters. In the same vein, the *RANLP 1st Workshop on Human-Informed Translation and Interpreting Technology* (Varna, Bulgaria, 2017) confirmed that interpreting technologies are an emerging hot topic.

## 2.1 Computer-assisted tools

Several attempts to meet interpreters' needs have been made in different interpreting contexts and modes by developing different types of language tools, mainly computer-assisted interpreting (CAI) tools. These tools basically encompass terminology management tools, note-taking applications and voice-text devices.

Terminology management tools cover specialised computer software that is used to compile, store, manage and search within glossaries, these are created previously by the user and are used to prepare terminology for an interpretation service, independently of the interpretation mode.

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[3] https://www.asling.org/tc39/?page_id=955.

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The state-of-the-art tools for terminology management have been investigated and their advantages and disadvantages analysed (cf. Costa, Corpas Pastor and Durán Muñoz, 2017; Rütten, 2017). Many of the existing tools are easy to use and have a user-friendly interface, however they can only be used on a certain platform: Mac OS (e.g., Intragloss[4]), Windows (e.g., LookUp[5] and Terminus[6]), Android (search apps, tablets or phones) and Windows, like Glossary Assistant[7] and InterpretBank[8]. Others are web-based and require an Internet connection. Recent cross-platform tools, such as Interpreters' Help[9] and Flashterm[10], allow access to glossaries from any device (computer, tablet or phone). They run on Windows, Mac, iOS and in web services.

Most of these tools cannot process documents, but only glossaries (InterpretBank, Interplex UE, LookUp) and do not support integration of meta-information and the generation of glossaries or terminology management needs to be done manually, except for in the case of the EU-Bridge

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[4] http://intragloss.com/index.php/.

[5] http://www.lookup-web.de/.

[6] http://www.wintringham.ch/cgi/ayawp.pl?T=terminus.

[7] http://swiss32.com/.

[8] http://www.interpretbank.com/.

[9] https://interpretershelp.com/.

[10] https://www.flashterm.net/.

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Interpreter Support Tool[11], which includes a term extraction and a named-entity recognition module. They accept a wide range of languages, although most of them permit only bilingual glossaries. Some, like InterpretBank or Intragloss, are well-documented, but this is usually not the case. Import options are included in tools such as InterpretBank, Intragloss, Interplex UE, LookUp or Terminus, but they are limited to Word/Excel formats or formats produced by the same tool (interplex UE). Finally, most of them only assist during the preparation phase and it is possible to print/export the generated glossaries for use during the interpretation. Two notable exceptions are BoothMate[12] and the latest version of InterpretBank (Fantinuoli, 2016). BoothMate, the offline companion app of InterpreterHelp, enables access to glossaries and fast search of equivalents in the booth. InterpretBank creates assignment-related glossaries accessible in a booth-friendly way. This CAI tool integrates automatic speech recognition (ASR) and term extraction.

The second group concerning note-taking applications is directly addressed at consecutive interpreters and their needs during the interpretation services (Orlando, 2010). Even now consecutive

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[11] https://www.interpreter-support.eu/.
[12] https://interpretershelp.com/boothmate.

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interpreters still use pen and paper to take notes, but they are increasingly turning to mobile devices to take notes or to support their note-taking. One of the most popular devices among technology-orientated interpreters is the digital smart pen. A digital pen is a writing or scanning tool capable of capturing and storing notes, text or drawings to upload to a computer. This type of smart pen is often used in conjunction with digital paper to create digital handwritten documents that can be edited at a later time. Some of them also feature Bluetooh antennas that transmit stored data wirelessly.

As in the previous group, these tools are frequently platform-dependent: iPad (e.g. Inkiness[13], Wacom Bamboo Slate[14] and Wacom Bamboo Folio[15]), Android (e.g., LectureNotes[16] and PenSupremacy[17]), Android and iOs tablets (My BIC

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[13] https://appadvice.com/app/inkiness-for-ipad/388384882

[14] https://www.wacom.com/en/products/smartpads/bamboo-slate.

[15] https://www.wacom.com/en/products/smartpads/bamboo-folio.

[16] https://play.google.com/store/apps/details?id=com.acadoid.lecturenotestrial

[17] https://play.google.com/store/apps/details?id=com.apking.ultipen

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Notes[18], Smarssen Bluetooth[19] and Neo N2[20]). Two main types can be distinguished in this group: a) those whose main functionalities are to take notes electronically and make sketches and share them by e-mail (e.g. Inkeness, LectureNotes, PenSupremacy, My BIC Notes, Smarssen Bluetooth and Neo N2) or sync to the cloud (the Wacom smartpads), and b) those which are capable of recording spoken words and synchronising them with notes that users manually write on special paper, like the smart digital pens Sky Wifi, Echo, Livescribe[21], Smartpen2 and Equil Note[22]. The recording of the notes can be uploaded over Bluetooth, Wireless or USB, and reproduced. Smart digital pens of this kind are truly versatile due to their transcription, recording, and syncing capabilities in different interpreting situations.

Other technology tools especially relevant for interpreters are voice-text devices and converters. Instead of taking notes, speech-to-text converters transcribe the speeches into text automatically.

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[18] https://itunes.apple.com/us/app/my-bic-notes/id611219106?mt=8

[19] https://www.smarssen.com/products/smarson-bluetooth-digitizer-smart-pen-for-ios-and-android-devices.

[20] https://www.neosmartpen.com/en/neosmartpen/.

[21] https://www.livescribe.com.

[22] https://www.myequil.com.

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Some examples of easy-to-use voice recognition applications are Voice Dictation for Pages[23] for iOS and Voice Pro[24] for Android, as well as multiplatform Voice Dictation[25] (for iOS, Android or Linux) and AudioNote (for iOs and its LITE version for Windows, MacOS and Android). Although very limited nowadays, there are quite a few devices based on voice recording: Audacity[26], Adobe Audition[27], AudioNote, iTalk Recorder[28] and QuickVoice[29]. Notability[30] combines manual note-taking, keyboard writing, voice recording and image.

Unit converters are not based on speech technology. They simply convert units (such as temperature, distance, currency, acceleration, finance, speed, weight/mass, amongst other topics) from one system to another. These applications tend to be platform-

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[23] https://download.cnet.com/Voice-Dictation-for-Pages/3000-2064_4-75758083.html

[24] https://play.google.com/store/apps/details?id=com.voicepro.

[25] https://dictation.io/.

[26] https://www.audacityteam.org/.

[27] https://www.adobe.com/products/audition.html.

[28] https://download.cnet.com/iTalk-Recorder/3000-2064_4-10908405.html

[29] http://www.nfinityinc.com/quickvoice/.

[30] https://itunes.apple.com/es/app/notability/id360593530.

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dependent: e.g., Unit Converter[31] and ConvertPad[32] (Android), Convert Units for Free[33] (iOS), Converto[34] (MacOS), Convert[35] (Windows) and the web applications ConvertUnits[36] and OnlineConversion[37].

## 2.2 Training aids and resources

Web resources are very popular among interpreters when it comes to training or when preparing an interpretation. Lack of space prevents us from detailing the vast array of e-dictionaries, glossaries, portals, directories, databases, webpages, etc. used in the preparation phase. In general, they do not differ substantially from those used by translators.

In recent years, corpora have been gaining ground among those resources. This should not come as a surprise given the special role of specialised terminology (domain and lexical knowledge) in the preparation phase (Costa, Corpas and Durán Muñoz,

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[31] https://play.google.com/store/apps/details?id=kr.sira.unit.
[32] https://play.google.com/store/apps/details?id=com.mathpad.mobile.android.wt.unit.
[33] https://itunes.apple.com/app/convert-units-for-free-1-unit/id337224035
[34] https://itunes.apple.com/us/app/converto-the-unit-converter/id576421334/.
[35] https://joshmadison.com/convert-for-windows/.
[36] http://www.convertunits.com.
[37] http://www.onlineconversion.com.

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2017). By using a compiled corpus as information source, the interpreter can access the phraseological and lexical information used in the documents, as well as the meaning and context of new terminology. This reduces the overall cognitive load involved in interpreting and enhances quality (Aston, 2015; Fantinuolli, 2017; Pérez Pérez, 2018). [38]

According to Xu (2018), corpus-based terminological preparation procedure enables trainee interpreters to achieve greater accuracy in simultaneous interpreting. But most corpora used for conference preparation are written corpora. In fact, very few are based on authentic interpreting. They are rather parallel corpora of translations (transcription of interpretations) and do not contain an aligned oral component.[39]

More specifically, interpreters are particularly interested in audio/video data. Multilingual websites

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[38] On the advantages of a corpus-driven approach to interpreting preparation and quality see also the papers in the edited volume by Straniero and Falbo (2012).

[39] Interpreting corpora face several technical challenges. For instance, compilation of oral corpora is a complex and time-consuming activity, especially in comparison with written corpora (Thompson, 2005: 254). Similarly, transcription of spoken data for corpora compilation is also a lengthy process and multimodality remains a serious problem. Other issues are their small size, their narrow scope and their unrepresentativeness.

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of international bodies and organisations usually contain speeches interpreted simultaneously in various languages (into the other official languages of a given organization). The original speeches and their interpretations are frequently accompanied by multilingual transcriptions in written form. The United Nations webpage[40] provides access to a variety of UN resources that include UNBISnet-Index to Speeches (meeting records of the principal organs since the mid-1980s, organized by country, organization, speaker, topic, etc.) and UNBISnet-Voting Records (UN voting data), all subsumed in the United Nations Digital Library. A similar resource is the database of debates and plenary sessions recordings (video/audio), interpretations (audio) and transcriptions (written) of the European Parliament,[41] which can be also accessed as a linked dataset (linked open data)[42].

Multilingual oral data are also provided by European institutions concerned about multilingualism, cultural diversity and interpreting (training). Once such example is Speech Repository[43], developed by the Directorate General for Interpretation. It contains a vast collection of real-life speeches on varying subjects and with different styles that cover

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[40] http://research.un.org/.

[41] http://www.europarl.europa.eu/.

[42] http://www.talkofeurope.eu/data/.

[43] https://webgate.ec.europa.eu/sr/.

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all EU official languages. Speeches are organized by language, type of interpreting mode, subject and level of difficulty (consecutive and simultaneous speech levels). Those categories can be used to filter the query search. Another relevant collection of oral data tailored to meet interpreters' needs is Speechpool[44], a repository of speeches (graded according to five levels of difficulty) that are specifically geared towards interpreters, and interpreters upload their own speeches in a variety of languages.

Finally, applications addressed at interpreting training – also called computer-assisted interpreting training (CAIT) tools– have evolved from simple collections of resources to fully-fledged 3D virtual learning environments (Sandrelli, 2015). Most of them involve some kind of voice recording, include a collection of exercises and complete speeches for interpreting practice (InterpretaWeb[45], Linkinterpreting[46], SpeechRepository), or, else, provide resources and applications for interpreters through portals or training platforms (ORCIT[47]).

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[44] http://www.speechpool.net/.

[45] http://www.interpretaweb.es/

[46] http://linkterpreting.uvigo.es/.

[47] http://orcit.eu/resources-shelf-en/story_html5.html

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More comprehensive types of applications are the Black Box (Sandrelli, 2005) and VIE (Virtual Interpreting Environment). Black Box is a CAIT tool designed to help trainee interpreters and professionals work with materials of different sources (texts, audio, video, exercises) and store their results for later review. Users decide what they want to do: either interpret some audio or video clips or do some interpreting exercises, such as shadowing, cloze exercises or sight translation. It also allows users to edit and break down video and audio recordings to create different exercises and adapt authentic conference materials to different levels of expertise. The updated version, VIE intends to develop "a fully-immersive virtual conference centre, along the lines of simulators available in the computer games industry." (Sandrelli and Hawkins, 2006). More recently, a number of pioneering projects (IVY 2011-2013 and EVIVA 2013-2014) have developed more sophisticated systems based on 3D Second Life (cf. Jennings and Collins 2007). Both rely on virtual reality for interpreter training (Braun et al., 2013).[48]

## 3. PORTABILITY, AUTOMATION AND TECHNOLOGY UPTAKE

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[48] Further information on these two projects can be found at: http://www.virtual-interpreting.net.

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Language technology is not only starting to change interpreting training (cf. Ehrlich and Napier, 2015), but also practice (Bauwelinck, 2016) and research (Pöchhacker, 2015; Prandi, 2017). This section will look at the way technology is shaping the interpreting landscape beyond existing tools and resources, the consequences of virtualization and automation for the interpreting services and the degree of technology adoption among interpreters.

## 3.1 Cloud-based systems and machine interpreting

Communications technology development has had a profound impact in the way interpretations are managed and delivered. The basic distinction between onsite and offsite technology marks the shift from over-the-phone and video remote interpreting to cloud interpreting[49], i.e. video remote interpreting where the videoconferencing is also online.

Both cloud-based computing and speech-to-speech translation technology have significantly contributed to the rise of mobile, automated interpretation systems. Nowadays, intercultural exchanges are being increasingly performed by means of apps in portable devices (smart phones,

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[49] For a very brief introduction to cloud computing, see the review paper by Pal, Barala and Kumar (2014).

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watches, iPads, laptops, etc.), especially in the areas of travelling, medical and hospital encounters, customer support, lectures, online meetings and day-to-day communication (Seligman, Waibel and Joscelyne, 2017).

Cloud interpreting encompasses interpretation in virtual and hybrid conferences and meetings as well as interpretation of instant human communication in online platforms, service platforms and the like (Bauwelink, 2016).

With cloud computing there is no need for conference equipment other than a computer, an Internet connection, a connected camera, and a headset. Cloud-based interpreting systems comprise a next generation of interpretation tools and technologies that enable virtualization and hybridisation of interpreting services. Some outstanding examples are Headvox50, Interprefy[51], Kudo[52] and Linguali[53]. These systems involve two main components: (a) the Interpretation Management System (designed to schedule and manage interpreting assignments, whether on-site or remote); and (b) the Interpretation Delivery Platform (designed to support the delivery of spoken-word

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[50] https://www.headvox.com/en/.

[51] https://interprefy.com/.

[52] https://kudoway.com/.

[53] https://linguali.com/.

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language services). Robust cloud-based interpreting solutions combine both components in a single, unified multilingual communications platform: e.g., Boostlingo[54], TikkTalk[55] and Akorbi[56]. Other novel solutions integrate video remote interpreting services with Telehealth (e.g., InDemand Interpreting[57]).

On the other hand, advances on language technology, NLP (Natural Language Processing) and AI (Artificial Intelligence) have prompted several attempts to automate interpretation (termed speech-to-speech translation or machine interpretation). Basically, machine interpretation software converts speech into text (automatic speech recognition), translates the text into another language (language translation) and then reads the text back to the user (speech synthesis).[58]

Many of the existing tools offer high accuracy and precision, but they have only been trained for very specific user cases, domains and a very limited number of languages (Aiken, Park and Balan,

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[54] https://www.boostlingo.com/.

[55] https://www.tikktalk.com/en/.

[56] https://akorbi.com/interpretation-services/. The app version at

https://itunes.apple.com/us/app/tikktalk/id1184820291?mt=8.

[57] https://www.indemandinterpreting.com.

[58] For a comprehensive introduction on machine interpretation, see Jekat (2015).

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2010b). For instance, early systems like Asura, Sync/Trans, Vermobil, DIPLOMAT, TRIM, EUTrans or IBM MASTOR supported only 2-3 language combinations (Aiken, Park and Balan, 2010a). More recent systems are capable of processing a higher number of language combinations (e.g., VoiceTra[59], Jibbigo[60], Google Translate[61], SpeechTrans[62]); still, their performance and accuracy is much lower and they can only process short sentences, in some cases only monodirectionally. Some of these tools have a military use, like the pioneer Phrasealator P2, the recent SQ.410i (both developed by by Voxtec[63]) and BOLT[64], but others are intended for general dialogues and are mainly addressed at travel-related conversations, such as VoiceTra 4U[65].

Even though some of those systems have reached acceptance levels that are considered 'fit to purpose' for non-critical content or non-critical users (akin to

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[59] https://www.apkmonk.com/app/jp.go.nict.voicetra/.

[60] https://jibbigo-translator.es.aptoide.com/.

[61] https://translate.google.com/intl/en/about/.

[62] https://play.google.com/store/apps/details?id=com.nuance.nmdp&hl=en.

[63] http://www.voxtec.com/

[64] https://www.sri.com/work/projects/broad-operational-language-technology-bolt-program

[65] https://itunes.apple.com/us/app/voicetra/id581137577?mt=8.

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'gist' translation), and for specific areas, they are still far from replacing professional human interpreters. As reported in the *2017 TAUS Speech-to-Speech Translation Report* (Seligman, Waibel and Joscelyne, 2017), speech translation still faces serious challenges. Technical and linguistic optimisation is still needed to ensure interpreting accuracy. In other words, new-generation machine interpretation systems will have to deal effectively with continuous speech (segmentation), language varieties (dialects, accents), features of spontaneous language (disfluencies, mistakes, repetitions, hesitations, corrections, etc.), data sparseness (especially in the case of neural engines) and other emotional and pragmatic issues.

## 3.2 Interpreters' perspective

Technology has come to stay… However, interpreters seem to be at a loss when faced with this 'disruptive' reality. The technological paradigm shift makes it necessary for industry and training alike to find the right balance between skepticism and enthusiasm when dealing with new technologies (Drechsel, 2018). However, there is still a scarcity of empirical studies about the extent to which interpreters have embraced technology.

In a former study, Corpas Pastor and Fern (2016) conducted an on-line survey of interpreters' needs

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and practices related to technology. Under the title *Technology Tools for Interpreters: Users' Awareness and Needs*, the survey was launched via Lime Survey to interpreting associations, forums and freelance interpreters, both inside and outside Europe. The survey was initially tested during pilot testing on a relatively smaller sample size. The items were organized around three sections: (1) personal information, e.g. age, gender, nationality, mother tongue, working language(s), etc.; (2) professional information, e.g. active languages, passive languages, professional background, modes, etc.; and (3) information regarding the use of technology, e.g. tools and resources used prior or during an interpretation, technology adoption, usefulness and impact.

The survey was distributed twice (February-March 2014). A total of 133 responses were received (63.15% females, 24.21% males). They had a large variety of European languages as active/working languages. Almost half of the respondents had been working in the profession for over 10 years (45.11%), and a large proportion of them also worked as translators (66.92%). Interestingly enough, most respondents admitted to not holding a degree in interpreting (60.90%), and 45.86% admitted to having received training in translation and interpreting, different from a University degree.

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Most interpreters worked on both simultaneous and consecutive modes.

As to the levels of technology adoption per mode, individuals who practiced consecutive interpreting (79.70%) would use technology tools and resources prior to an interpretation in order to gather information on the subject beforehand (CAI tools, translation memories, term extractors, corpora, etc.), but these tools represented only a small proportion (20%) of all the non-technology resources and printed material usually preferred by consecutive interpreters (dictionaries, glossaries, e-resources, parallel texts and other printed material).

Individuals who specialised in simultaneous interpreting (69.17%) required the use of equipment (portable or non-portable). Lack of time and pressure in the booth were the reasons why simultaneous interpreters felt that there is limited time for technology during an interpretation. So, the vast majority would use bilingual dictionaries and their own glossaries to search for terms. Some technical support in the form of laptops, iPads and tablets could come from the colleague in the booth if needed. Only UN and EU simultaneous interpreters admitted to using some technology tools (multimedia databases, termbanks) both prior and during the task, as well as dictionaries, glossaries, etc. Similarly, individuals working on whispered

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(60.15%), liaison (46.63%) and sight interpreting (79.70%) would not use any technology tools during the interpreting task, apart from portable equipment during an interpretation (microphones and headsets; and laptops, iPads or smartphones). They tended to resort to dictionaries and glossaries.

Interpreters who worked over the phone (35.34%) claimed, as in the other fields, to use monolingual and bilingual dictionaries, glossaries and thesauri, as well as web based resources, corpora, termbanks, machine translation or translation memory systems as their main tools to prepare for an assignment. During over-the-phone phone interpreting, most respondents admitted to using bilingual online dictionaries and glossaries to look up terms on their laptops, iPads or mobile devices whilst interpreting, should an unknown term present itself.

All in all, results showed that over 50% of all respondents did not use any technology tools or resources during interpreting (mainly for preparation), while other non-technology tools, like dictionaries and glossaries, and some web-based resources seemed to be the preferred options.

In general, most respondents showed a positive attitude to technology, though. Most of them agreed that technology tools would be of use to interpreters and could impact the quality of their work.

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Consecutive interpreters agreed that technology tools could have a positive impact on the outcome. Simultaneous interpreters would like to have glossary management tools in the form of portable software available for the interpreting task. And most professionals in the field of over-the-phone interpreting would like to be able to access such interpreting tools and resources online (as portable software or as apps).

Three years later, the same survey was launched (with minor changes) to students of interpreting at a US training institution (Arizona, July 2017).[66] The main objective was to check the validity of the questionnaire and to compare results as regards levels of technology uptake in a different scenario: professional interpreters enrolled in a further course at the National Center for Interpretation of the University of Arizona.

We received 32 complete responses: 57.89% females and 23.68% males, mostly US and Mexican citizens with Spanish (19) or English (8) as their mother tongue (plus 5 bilinguals), with Spanish and English as their sole working/active languages.[67] 10.53% had worked as interpreters over 10 years,

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[66] We would like to thank Prof. Sonia Colina (NCI, Arizona) for her help with the questionnaire distribution (see Annex).
[67] One respondent also had American sign language as a working language.

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although most of them had some professional experience:  less than 1 year (15.79%), 1-5 years (26.32%), and 5-10 (21.05%).   Half of the respondents worked both in translation and interpreting. Over 76% admitted not holding a BA degree in interpreting, versus 5.25% who declared to hold a BA degree in Translation and Interpreting (only one respondent had a master's degree in the field). By contrast, 47.37% held a University degree in another field: Psychology, Business Administration, Spanish, Computer Engineering, International Studies, Biochemistry, Latin American Studies, Bilingual Education, Architecture, Criminology, Journalism, English Teaching, Education, etc.

Most respondents were interpreters for the social services that specialised in consecutive (73.68%) and simultaneous (71.05%) modes, followed by sight interpreting (65.79%), over-the-phone (34.21%) and liaison (13.16%) interpreting. Their main fields of expertise were judicial, legal, court and police interpreting (57.89%), health or medical interpreting (39.47%), legal interpreting (36.84%), social interpreting (34.21%) and business and financial interpreting (21.05%), although 55.26% respondents classed their professional activity as general interpreting and over-the-phone 'teleinterpreting').

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Almost 40% admitted using portable interpreting equipment and telephone, and only 10.53% would use sound-proof booths. It is worth indicating that half of the respondents actually used technology tools and resources to prepare an interpretation (50%). The preferred options, in descending order, were web-based resources, databases, e-journals, e-periodicals and e-books, computer-aided translation tools and audio input (videos, recordings, text-to-speech synthesis, voice recognition, etc.), followed by machine translation systems, termbanks and concordancers (no corpora). However, non-technology resources were still the most popular resources among them (92.11%), although some interpreters said not to use any resources at all for the preparation phase (7.89%).

As to the question whether they used any resources while actually interpreting, 44.74% admitted using both technology tools and non technology resources, although the proportion of non-users was slighter higher in the case of technology tools (28.95% versus 26.32%). The results show a sharp decrease in the frequency and range of resources used during an interpretation (basically dictionaries and glossaries), to the detriment of technology tools (mostly web-based resources).

In order to ascertain interpreters' needs, the questionnaire included some open questions about

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the types of tools and resources they would like to have for preparing an interpretation and while actually interpreting. In the first case (prior to an interpretation), 42.11% of the respondents answered this question. They mentioned portable equipment (notebooks, headpieces, smartpens, smartphones, light laptops) and digital resources, in addition to reference material, handouts provided to the participants, parallel texts and so on. Some of the digital resources envisaged for the preparation phase were audiovisual data and specialised databases, electronic and web-based dictionaries and glossaries, programs to compile documents on possible topics, to extract key words for a particular interpretation, to identify frequently and repeated chunks in speeches, to gather background information and identify accents, etc.

As regards the kinds of tools and resources interpreters would like to have during an interpretation, only 39.47% answered this question. Quality of the equipment was obviously an issue, as interpreters mentioned 'decent' headsets, 'optimal' sound equipment and 'best' booths, 'secure and strong link' to the Internet, 'reliable' Wifi connection, etc. Portable devices were also envisaged for the delivery of the interpretation. As to tools and resources, only digital, web-based and electronic dictionaries were mentioned.

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Desirable access and usefulness of technology was also investigated. Respondents showed a clear preference for on-line access to tools and resources (57.89%), followed by computer applications (apps, 34.21%) and portable software (28.95%). Respondents were also asked to rate from 0 to 5 (with 5 being the highest score) the extent to which technology tools would be of use to interpreters. 42.11% rated 5, 15.79% rated 4, 13.16% rated 3, and only 5.26% rated 2 (there were no ratings 1 or 0). The same rating system was used to find out interpreters' expectations about the impact of technology tools in the quality of interpreting. The results showed again a very positive attitude and prospective gains, as 31.58% rated it 5 (4=21.05%; 3=13.16%; no ratings 2, 1, 0).

Finally, respondents were free to add further comments or suggestions. From their free texts, it could be inferred that interpreters would happily adopt technology, but they are concerned about the robustness and pricing of the prospective tools. But a most revealing comment said: "Thank you for your study of this important but often overlooked field."

## 4. CONCLUSION

While interpreting technology is already a fact, interpreters' use of technology probably remains in the realm of wishful thinking. The reasons could be

multifold. It could be the case that interpreters perceive most current technological advances as irrelevant, useless or far away from their daily work practice. In this context, a big gap exists between practitioners and software developers in the interpreting industry. Further objections may relate to the allegedly negative impact technology has on the overall quality of interpretations and on interpreters' cognitive effort. Fears of human interpreters being replaced by technology (similarly to the early worries about machine translation) could also be playing an important role.

Technology changes and developments are paving the way for profound transformations in the discipline, although the academic debate has just started to address these changes, their implications and the challenges that lie ahead. So far, there has been insufficient empirical research on the actual impact of computerised tools and machine interpreting, on new trends such as bring-your-own-device or remote interpreting or on hot issues like virtualisation and portability. There are not enough quality-driven and user-driven studies of interpreting technologies that could picture and identify the key strengths and weakness of the current situation. This will definitely have an impact on the theoretical and empirical foundations of interpreting, the multifaceted cognitive processes

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underlying the various interpreting modes and tasks. Otherwise, stagnation might be hoovering.

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## ANNEX (QUESTIONNAIRE)

### *TECHNOLOGY TOOLS FOR INTERPRETERS: USERS' AWARENESS AND NEEDS*

### I. PERSONAL INFORMATION
1. Age
>    Please write your answer here:
2. Gender
>    Please choose only one of the following:
>>        Female
>>        Male
3. Nationality
>    Please write your answer here:
4. Mother tongue(s)
>    Please write your answer here:
5. Working language(s)
>    Please write your answer here:
6. Additional non-working languages (C)
>    Please write your answer here:

### II. PROFESSIONAL INFORMATION
1. Active languages (interpreted to and from)
>    Please write your answer here:
2. Passive languages (only interpreted from)
>    Please write your answer here:
3. Country where professional activities take place
>    Please write your answer here:
4. Years of professional experience as an interpreter

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Please choose only one of the following:
0-1
1-5
5-10
Over 10

5. Do you also work as a translator?
Please choose only one of the following:
Yes
No

6. If so, years of professional experience as a translator
Please choose only one of the following:
0-1
1-5
5-10
Over 10

7. Do you hold a BA degree in Interpreting?
Please choose only one of the following:
Yes
No

8. Do you hold a BA degree in Translation?
Please choose only one of the following:
Yes
No

9. Do you hold a Master's degree in Interpreting?
Please choose only one of the following:
Yes
No

10. Do you hold a Master's degree in Translation?
Please choose only one of the following:

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Yes

No

11. Do you hold a University degree in another field?

Please choose only one of the following:

Yes (please, specify)

No

Make a comment on your choice here:

12. Have you had any training in Translation and Interpreting (different from a University degree)?

Please choose only one of the following:

Yes (please, specify)

No

Make a comment on your choice here:

13. Interpreting modes practiced

Please choose all that apply:

Consecutive interpreting

Simultaneous interpreting

Whispered interpreting

Sight interpreting

Liaison interpreting

Sign language interpreting

Over-the-phone interpreting

Other:

14. Technical equipment used

Please choose all that apply:

Sound-proof booth

Portable interpreting equipment

Telephone

Video

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       None
       Other:

15. Context
    Please choose all that apply:
       Conference interpreting
       Community/Public     sector interpreting
       Business negotiation
       Other:

16. Fields of expertise
    Please choose all that apply:
       General interpreting
       Judicial, legal, court and/or police interpreting
       Military interpreting
       Health or medical interpreting
       Social interpreting
       Business/Financial interpreting
       Technical/Engineering interpreting
       Science interpreting
       Media interpreting
       Legal interpreting
       Other:

III. INFORMATION REGARDING THE USE OF TECHNOLOGY

1. Are you familiar with the concept of teleinterpreting ('over-the-phone')?
    Please choose only one of the following:
       Yes
       No

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2. Do you use any non-technology tools and resources prior to an interpretation to gather information on the subject, terms, etc.?

> Please choose only one of the following:
>
> > Yes
> >
> > No

3. Do you use any technology tools and resources prior to an interpretation to gather information on the subject, terms, etc.?

> Please choose only one of the following:
>
> > Yes
> >
> > No

4. What type?

Only answer this question if the following conditions are met:

> Answer was 'Yes' at question '25' (3. Do you use any technology tools and resources prior to an interpretation to gather information on the subject, terms, etc.? ). Please choose all that apply:
>
> > Audio input (videos, recordings, text-to-speech synthesis, voice recognition, etc.)
> >
> > Computer-aided translation tools
> >
> > Translation memory systems
> >
> > Machine translation systems
> >
> > Term extractors
> >
> > Termbanks
> >
> > Concordancers
> >
> > Corpora

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Web-based resources

Bilingual dictionaries/glossaries/thesauri

Monolingual dictionaries/glossaries/thesauri

Parallel texts and other printed materials

Databases

E-Journals, e-periodicals and e-books

Other:

5. Do you use any non-technology tools and resources during an interpretation?

Please choose only one of the following:

Yes

No

6. Do you use any technology tools and resources during an interpretation?

Please choose only one of the following:

Yes

No

7. What type?

Only answer this question if the following conditions are met:

Answer was 'Yes' at question '28' (6. Do you use any technology tools and resources during an interpretation? ). Please choose all that apply:

Audio input (videos, recordings, text-to-speech synthesis, voice

recognition, etc.)
Computer-aided translation tools
Translation memory systems
Machine translation systems
Term extractors
Termbanks
Concordancers
Corpora
Web-based resources
Bilingual dictionaries/glossaries/thesauri
Monolingual dictionaries/glossaries/thesauri
Parallel texts and other printed materials
Databases
E-Journals, e-periodicals and e-books
Other:

8. What kind of tools/resources would you like to have at your disposal prior to an interpretation?
Please write your answer here:

9. What kind of tools/resources would you like to have at your disposal during an interpretation?
Please write your answer here:

10. How would you like to access such tools and resources?
Please choose all that apply:
On line
As portable software
As application software (apps)

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11. To what extent do you think the technology tools would be of use to interpreters? (rating 0 to 5, with 5 being the highest score)
> Please choose only one of the following:
>> 0
>> 1
>> 2
>> 3
>> 4
>> 5

12. Do you think the use of technology tools can impact the quality of interpreting? (rating 0 to 5, with 5 being the highest score)
> Please choose only one of the following:
>> 0
>> 1
>> 2
>> 3
>> 4
>> 5

13. Further comments/suggestions.
> Please write your answer here: