Is Web-Based Computer-Aided Translation (CAT) Software Usable for Blind Translators?

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Abstract. In spite of the progress made to date in the area of Human-Computer Interaction (HCI), recent experience reports by end users as well as research work have suggested that leading desktop-based Computer-Aided Translation (CAT) tool providers fail to consider the particular needs of screen reader users when developing their software. The study presented in this paper was conducted to assess the usability of two popular online CAT tools (Matecat and Memsource) that could serve as an alternative solution to inaccessible desktop applications. Findings indicate that Matecat is significantly more usable than Memsource, although changes would be needed in the former for blind translators to be able to perform a translation job completely autonomously and efficiently. Overall, our study suggests that accessibility awareness is still low in the translation technology industry, and that further research and development is needed in to guarantee equal opportunities for all in the translation market.

Keywords: Computer-Aided Translation, Web Accessibility, Blind Translators, Usability.

1   Introduction and Motivation

Computer-aided translation (CAT) tools are the most popular example of translation technology and, over the last years, knowing how to use them has become an indispensable skill for translators to access the job market. Beyond the traditional goals of increasing quality and productivity levels, translation technologies are now designed, more than ever, to be as enjoyable and easy to use and learn as possible. In order to achieve the latter, translation software providers try to account for different end user profiles by designing cross-device, cross-platform solutions and multimodal interfaces.

Nevertheless, and in spite of the progress made to date in the area of Human-Computer Interaction (HCI), recent experience reports by end users as well as research work have suggested that leading desktop-based CAT tool providers fail to consider the particular needs of screen reader users when developing their software [6, 7]. Although some efforts have been devoted in the past to developing translation tool prototypes that particularly target blind translators [1], we contend that, for them to be treated

equally as their sighted peers at a professional level, accessibility should be built into the development and design practices of the commercial tools available on the market.

Taking into account the conclusions drawn in prior research work about the low level of accessibility featured by the most popular desktop-based CAT tools [7], we conducted a follow-up study to explore the potential of web-based CAT tools as a more suitable solution for blind translators. Our study, which took place over a period of two months (May-June 2016), was grounded on the belief that web development techniques are more standardised than most of the computer programming styles available and, therefore, a higher level of accessibility can be achieved. To the best of our knowledge, this is the first experimental study on the use of translation technology conducted with screen reader users. This novel focus on accessibility is not only motivated by the potential social impact that the availability of fully accessible commercial CAT tools could have, it also aligns with the recent research interest shown on user centred factors in translation technology design and evaluation, with an increasing number of studies revolving around the translators' needs in terms of UX [5] and multimodal software [8, 9].

2   Method

The goal of the study was two-fold: on one hand, it sought to assess the usability of two Machine Translation-integrated (MT) online CAT tools (Matecat[1] and Memsource[2]) and, on the other hand, it aimed at identifying the most recurrent accessibility issues in this type of software, with a view to developing a quick "accessibility checklist" for current and future online CAT tool developers. Due to space restrictions, this paper will only present the overall results of the former. In the study, we followed a classic usability evaluation approach, where a cohort of blind translators, mainly recruited through the RoundTable mailing list,[3] were requested (i) to conduct a simple post-editing exercise (i.e. translation and revision of machine-translated text in their mother tongue) and (ii) to provide information about their interaction with the software.

More specifically, translators were asked to report any issues encountered while trying to perform the post-editing exercise via a validated frustration experience form, used in prior work for HCI studies of similar nature [2, 3]. Once the interaction finished, participants completed a survey, inspired by the Computer System Usability Questionnaire (CSUQ) [4]. The survey also included several questions intended to measure the participants' confidence in having successfully completed the task requested.

The two tools chosen were the only ones among a selection of six popular web-based post-editing environments which, during a pre-test, met the basic accessibility requirements needed for the study to be feasible. Participants were allowed to use their own assistive technology (screen reader only or screen reader in combination with their

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[1] https://www.matecat.com/ Last access: 29th January 2018.

[2] https://www.memsource.com/ Last access: 29th January 2018.

[3] http://lists.screenreview.org/listinfo.cgi/theroundtable-screenreview.org Last access: 29th January 2018.

refreshable Braille display), as well as to test the tools with different browsers, should they find it appropriate. They all performed the experiment using Windows as the main operating system.

The 11 participants (8 female, 3 male) included representatives from seven different nationalities: Austria (N=3), Germany (N=2), Italy (N=2), Canada (N=1), Egypt (N=1), Poland (N=1) and UK (N=1); who had a translation background with a university degree (BA or MA), and whose self-rated computer skills on a 5-point scale were excellent (N=5), good (N=5) and adequate (N=1). From the 11 participants, six had a translation job at the time of the study, while the other five were working in related fields, such as transcription, revision or public administration.

3   Usability evaluation: key findings

In total, each tool was tested by 10 translators (nine translators tested both tools, one translator tested only Matecat and one translator tested only Memsource). As illustrated in Figure 1, findings indicate that, overall, blind translators participating in the study found that Matecat (average score $\bar{x}$=4.20, sd=0.51) was significantly more usable (p<0.001) than Memsource (average score $\bar{x}$=2.37, sd=1.13). A significant difference was also found between both tools when particularly looking at the system usefulness subscale (Matecat, average score $\bar{x}$=4, sd=0.11; Memsource, average score $\bar{x}$=1.64, sd=0.63; p<0.001). It is also worth noting that blind translators reported a higher level of confidence in having successfully completed the translation task in the case of Matecat, which is in line with the CSUQ results.
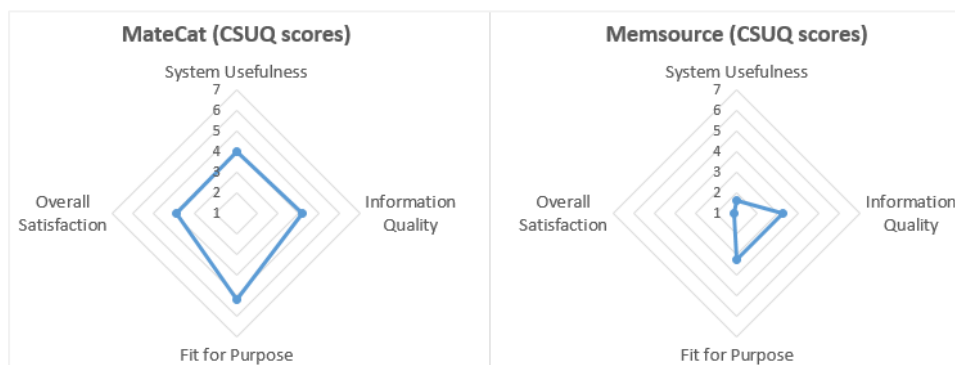

Fig. 1. Overall CSUQ scores (on a 7-point scale) for Matecat (radar chart, left) and Memsource (radar chart, right)

Paradoxically, the qualitative data collected through the frustration experience forms reveals that, in the case of Matecat, 48.15% of the issues reported were found in the translation editor, usually considered as the main working environment (as opposed to the general settings and project management sections of this type of tool). Some examples included difficulties while editing the MT suggestion or copying parts of the source segment into the target language segment. This can be explained by the fact that,

while only 27.59% of the frustration experiences logged by participants when interacting with Memsource referred to the translation editor, these seemed impossible to overcome for all screen reader users. In contrast, most translators using Matecat figured out a coping strategy to bypass the issues found in the translation environment, either by fixing the problem themselves or by finding alternative solutions to carry out the task requested.

4   Concluding remarks

From a general perspective, the usability evaluation carried out suggests that changes would be needed in the tools tested for screen reader users to be able to perform a translation job autonomously and efficiently, although those would be minor in the case of Matecat. Additionally, the quantitative and qualitative data gathered have contributed not only to identifying current challenges faced by blind translators when using the two tools evaluated, but also to provide important insights into which general recommendations could be followed by translation technology providers to adopt an accessible design approach when developing their software.

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