Recommendations for Translation Environments to Improve Translators' Workflows

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Abstract

Language professionals play an important role in an increasingly multilingual society where people commonly do not sufficiently understand all languages used in their environment. While there are many translation environment tools (TEnTs) available to support translators in their tasks, there is evidence that these tools are not used to their full potential. Within the context of a broad research project, SCATE (Smart Computer-Assisted Translation Environment), we investigated the current tools and work practices of language professionals to enable personalization of the user interfaces of translation environments and improve translators workflows.

We used complementary research methods in our study: a survey among language professionals, semi-structured interviews with five local companies involved in translation and nine contextual inquiries with both in-house and freelance translators and revisers. Based on the gathered information we identified eight relevant scales to typify the users and their experience with TEnTs, we created generalized workflows and summarized the key insights using two personas.

We present a set of recommendations that could positively impact translators workflows. These recommendations are in line with, but go beyond state of the art: they are focused on improving efficiency, effectiveness and usability of translation environments as well as giving more control to translators.

1 Introduction

Human-computer interaction in the existing translation environment tools (TEnTs) is far from optimal, as most of them are developed in a technology-driven way, making them complex and impractical due to the abundance of features (Lagoudaki, 2006; O'Brien et al., 2010), or sacrificing power for a simple interface. The SCATE (Smart Computer-Assisted Translation Environment) research project addresses these issues. It aims to improve translators' efficiency through better integration of linguistic resources (e.g. comparable corpora) and existing technologies (e.g. translation memory technology, machine translation and speech recognition) as well as create personalised interfaces for translation work. Initial work regarding the latter aspect is presented in the current paper.

Interfaces in SCATE will be developed in a user-driven way, i.e. in close interaction with end users. To get some insights into translators' work practices, we used complementary research methods, a survey among language professionals, semi-structured interviews with five local companies involved in the translation process (technology) and nine contextual inquiries with both in-house and freelance translators, and revisers.

This paper discusses related work and presents the results of the performed user research. Based on this research, theories and experimental results originating from or used within the domain of Human-Computer Interaction, several recommendations are made for future research and development related to translation environments. Part of these recommendations are addressed in ongoing research as part of the SCATE project.

2 Related Work

The study described in the current paper used complementary research methods, e.g. surveys, semi-structured interviews and contextual inquiries, to obtain insights into translators work practices. Previous empirical research in the Translation Studies field that have shown that

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such methods have proved successful in gathering data about the usage of translation environment tools and support new designs that better match users needs (Lagoudaki, 2009; Désilets et al., 2008; Asare, 2011; Karamanis et al., 2011; LeBlanc, 2013).

Based on a large-scale survey, Lagoudaki (2009) made some recommendations with respect to the user interface of translation memory systems: they should be fully operable through keyboard shortcuts, support undo, provide specific help and feedback, minimize navigation to get relevant information, support WYSIWYG interaction, inline comments, pre-translation in a separate window, and in general not enforce any specific workflow.

Asare (2011) employed ethnographic methods to investigate whether the workflows as designed by the TEnT developer matched the real-life translation workflows at a translation agency. His fieldwork revealed that users were not aware of the tools' full capabilities and identified nine factors for the lack of use or underuse of certain features. Asare concluded that understanding user needs is essential to the development of user-friendly translation tools.

Karamanis et al. (2011) investigated the work practices of six commercial staff translators working in two translation agencies to get insights about the prospective use of Machine Translation (MT) in localization settings. His study concludes that user-centred design methods are needed to specify the details of the interaction between all parties involved in the translation process, which is often mediated through the translation memory but often also includes informal communication.

Massey and Ehrensberger-Dow (2011) used multiple methods (including surveys, ethnographic observation, semi-structured interviews and various log types) to determine ergonomic needs of translators in Switzerland. They found translators had inefficient resource and desktop management, deficient knowledge of (automated) tool features and ineffective interaction with user interfaces. They saw remedies in training of translators and improved usability of tools.

Moorkens and O'Brien (2013) launched a survey among translators and post-editors to find out what features would be desirable in an integrated Post-editing interface. Besides specific desirable features for a post-editing UI, the survey revealed users general dissatisfaction with their current editing environment. The UI should be easy customizable, clean and uncluttered, allow plugins for dictionary and Internet search, improved concordance search and additional keyboard shortcuts.

Leblanc (2013) performed semi-structured interviews and observations in three translation firms in Canada. These led him to discuss several advantages, which mostly relate to the capability to reuse passed results, and disadvantages, which relate to change in work practices (requirement to use sentence by sentence translation, which may lead to lower creativity) and overuse of translation memory; becoming lazy (loss of or lack in "natural reflexes") and persistence of quality issues.

3 Methodology

A well-known and established technique to gather context in user-centred design projects is *contextual inquiry* (1997; 2004). A contextual inquiry is suited for getting insights in users' work structure and concerns sessions of two to three hours in which a team member of a user interface design and development project observes the user. During a session, the user is interrupted from time to time in order to discuss some details regarding specific aspects that have been observed. By organising a reasonable amount of sessions with a varying group of users in terms of roles and work styles, work practices of professional translators can be studied and analysed while handling their translation jobs.

Before the language professionals were recruited for contextual inquiries, it was necessary to gain general insights in the users' context and identify the profiles of the users that should

participate in the study. This context was collected through a web survey and semi-structured interviews. To learn about the professional translators' general work practices, work structure and preferences for translation environment tools , a *web survey* (Lazar et al., 2010) was conducted. We prepared a questionnaire within our multi-disciplinary research team, including language professionals, aiming to learn about current approaches taken by language professionals and challenges for translation environment tools and terminology resources. The current paper mainly presents the results related to translation memory tools. Language professionals were invited to participate to the survey through social media (e.g. LinkedIn, Twitter) and to mailing lists for language professionals. The web survey was online from December 2014 until February 2015.

The *semi-structured interviews* (Lazar et al., 2010) were conducted with 5 companies from Belgium that are involved in translation on a daily basis between October 2014 and January 2015. Semi-structured interviews are used to understand the user needs based on a series of interviews. In such an interview, the discussion starts with a set of fixed questions but allows to freely discuss topics that come up during the interview. The fixed set of about 30 questions, was based on information we obtained from the interviewees beforehand using a small questionnaire. These 30 questions inquired the interviewees about their demographics, their company (e.g. size and core business), their approach for translation jobs (e.g. assignment a translation job to language professionals, collaboration between language professionals, and software used for management of the translation jobs), their use of translation tools (e.g. restrictions, and education of language professionals), and their prospects concerning the future of TEnTs. During the interviews, in which often a project manager participated, the general workflow of each organization, the type of translators they work with and the translation software they use, were discussed.

Together with the results of the web survey, the results of the semi-structured interviews provided us context that was important to have before the contextual inquiries with the language professionals took place.

We conducted nine *contextual inquiries* that involved seven translators, one supervisor and one team that provides captions on broadcast series. We decided to observe language professionals with different profiles to get a clear overview of the roles and workstyles of language professionals to detect similarities and differences in their workflows. The participants were asked to sign an informed consent form (Lazar et al., 2010) before the observations, in which they allowed us to take audio recordings and pictures. Notes were taken for each contextual inquiry, which usually took two to four hours.

4 Results

4.1 Survey

A worldwide total of 181 respondents (119 female, 62 male) completed the survey, out of which 72,38% were freelance translators , 24,31% in-house translators, 11,05% terminologists, 9,94% interpreters, 7,18% project managers and 6,63% post-editors. More than 30% of the translators had more than 10 years of experience. About 34,34% of the respondents translated between 2000 and 3000 words a day, 16% between 3000 and 4000 words a day, and 6% more than 4000 words a day.

More than 75% of the respondents indicated that they use a translation environment tool (TEnT) in their daily work, out of which 38,13% had more than 10 years of experience with TEnTs. By far the most commonly used TEnT was SDL Trados, followed at significant distance by memoQ, CafeTran and XTM International. Figure 1 provides a more detailed overview of the used TEnTs.

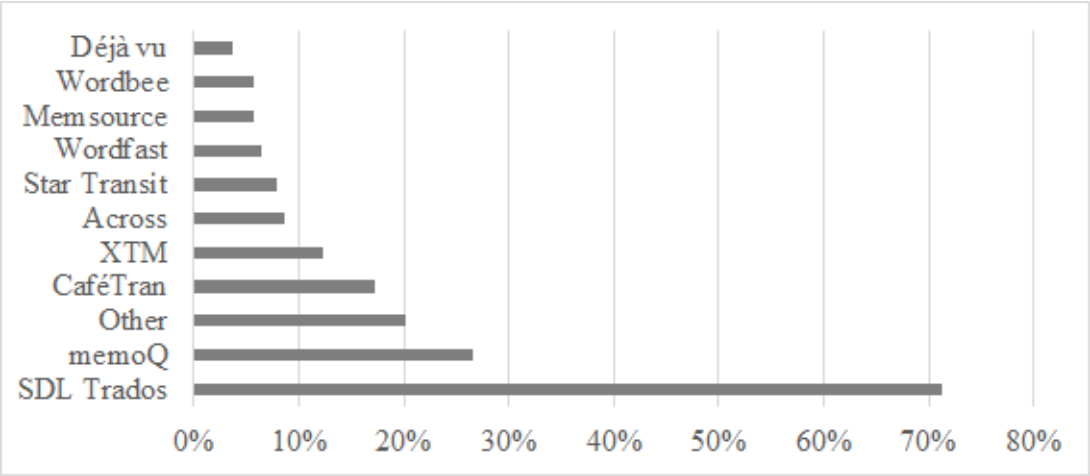

Figure 1: TEnTs used by survey respondents.

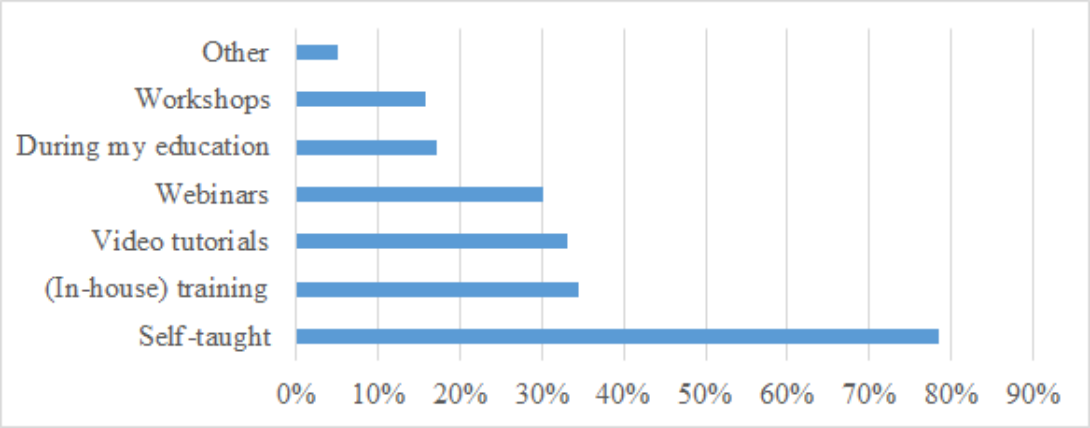

Figure 2: Used methods of learning how to use a TEnT.

A considerable amount of users indicated that they learned these tools by themselves (78,42%), followed at a distance by in-house training (34,53%), video tutorials (33,09%) and webinars (30,22%). Only few respondents received TEnT training during their education, workshops or other means of learning (Figure 2). About 15% reported to receive training but to not learn on their own.

Translators used TEnTs to ensure terminology consistency, save time, increase their productivity and improve the general quality of their translations. Important aspects when using a tool (4) included ease of use (86,33%), followed by good resource management (69,78%), speed (65,47%), ease of learning (64,75%), compatibility with other tools (58,27%), quality assurance checks (51,80%) and easy to customize (39,57%). These criteria, however, varied per user profile and needs. For example, speed and project management features were one of the most important criteria for project managers and the users of the cloud-based tools.

While more than 50% of the users preferred to pre-translate the source text with the help of translation memory, only 10% used machine translation. Other widely used features were concordance (63,31%), analysis/statistics/word counts (59,71%), terminology management (51,08%) and QA features (48,20%). Less used features were alignment (34,53%), review (32,37%), term extraction (14,39%)), and collaborative features (TM sharing, instant chat) (11,51%).The reasons for use or no-use of specific features may vary according to the users knowledge of the tool, their role in the translation process and the level of implementation of

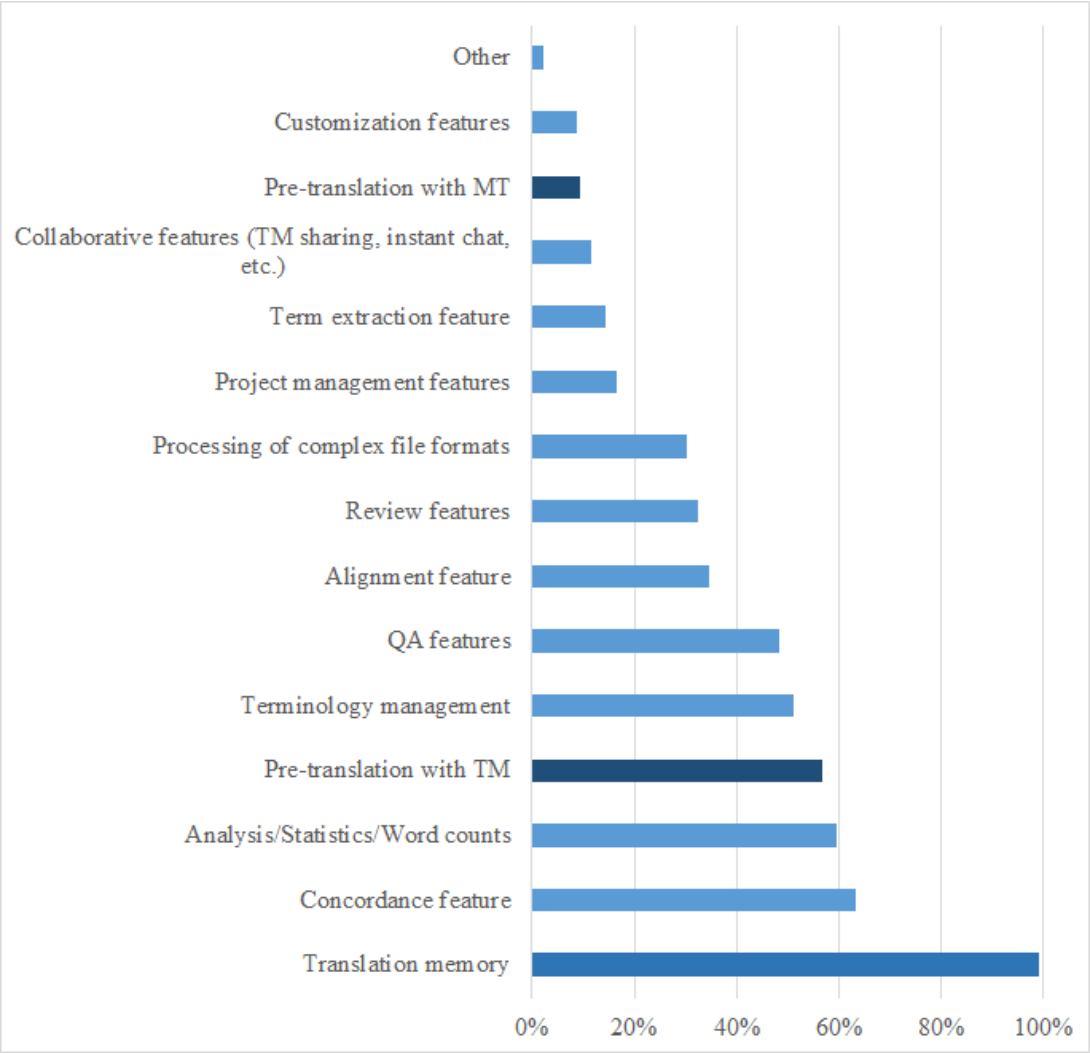

Figure 3: Most frequently used features of TEnTs.

a particular feature. When confronted with an open question related to the optimization of their TEnT, users reported about 23 features that would require either improvement and would need to be added. These features, except for language and platform specific requests have been categorized and listed in Appendix A.

The results of the survey provided insights into the specifics and preferences of a wide range of TEnT users. In order to obtain a better understanding of why language professionals have particular preferences, we complemented this survey with qualitative studies, such as semi-structured interviews and contextual inquiries, which provided further insights into the work practices and workflows of different user-profiles.

4.2 Semi-Structured Interviews

The semi-structured interviews focused on the workflows and the roles involved in the translation process used in the companies of the interviewees as well as specific desires for TEnT-related research. Interviewees reported a need for flexible user interface designs with customization options that allows users to adapt the tools to their individual workflows. Live previews or WYSIWYG [1] are desirable features within the translation editor. These findings are in line with the results of our survey and that of Lagoudaki (2009).

[1] WYSIWYG: What You See Is What You Get

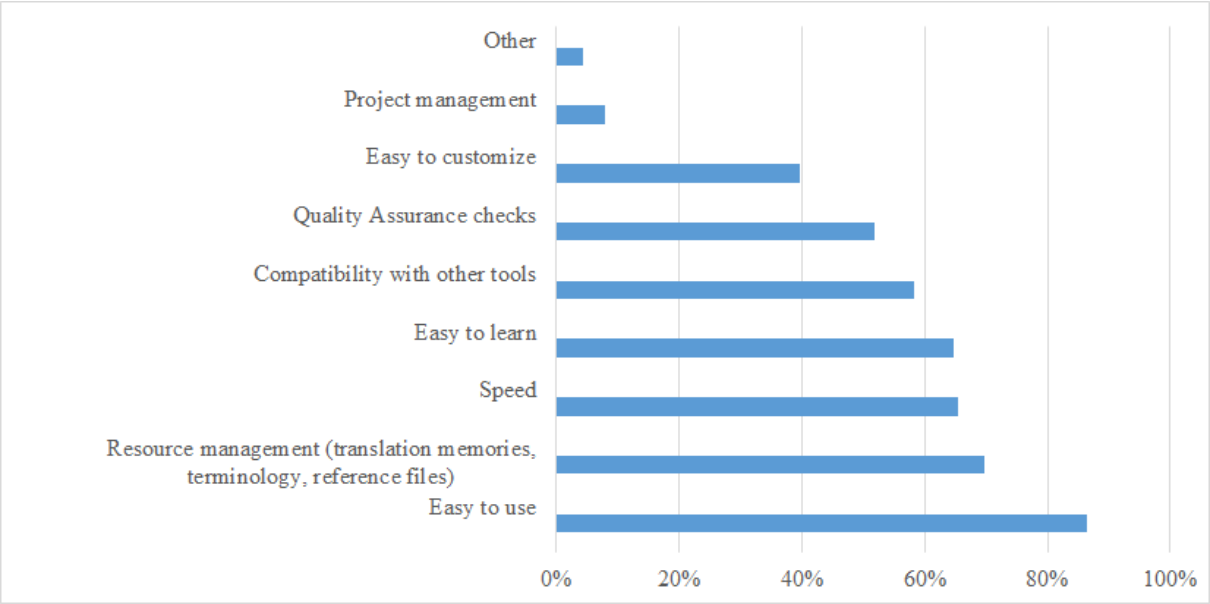

Figure 4: Important aspects when using TEnTs.

Almost all companies that were interviewed are working with freelance translators, which is in line with the percentage (72,38%) of freelance translators that filled out the survey. However, the type of auditors they were working with varied from company to company. Some companies preferred to have in-house auditors while others preferred to select a second freelance translator to revise the translation. Many companies used their own system for the management and billing of translation jobs, while some companies had restrictions with respect to the use of a TenT. One of the companies had an in-house developed TenT tool which is used by their freelance translators, whereas the majority of the companies required their translators to use SDL Trados. This is in line with the results from our survey, in which 71,22% of the respondents marked that they use SDL Trados.

The companies had different prospects concerning the future. Some companies were looking forward to having a cloud-based solution, while others feared privacy issues. Interoperability of files exchanged between different translation environments remained an issue. They had a need for flexible user interface-designs with customization options that allowed users to adapt the tools to their own workflows. Live preview or WYSIWYG were desirable features within the translation editor.

In order to minimize inconsistencies in the final document, all interviewed companies preferred assigning one translator per job, rather than allowing multiple translators and reviewers work on the same document at the same time, which was also reported in the survey, in which 69,49% of in-house translators, post-editors, and terminologists mostly work individually. With regards to the relationship between clients and translation vendors, clients are not involved in the translation process and they hardly provide any feedback after the translation has been delivered.

4.3 Contextual Inquiries

To discuss the results of the contextual inquiries we refer to the nine participants (details in Table 1) using an anonymous name, such as p1 or p2. We note that p8 was a translator working together with two colleagues to provide subtitles for television content. Because p8's workflow diverges significantly from the other observed workflows, it is not taken into account for our report on the workflows. Most of the translation jobs of the participants concerned business-

	Exp.	L.	W.	SW Kn.	Train.	Support	Scr.	Device	M/K	Custom.	P/D
p1	10+	4	IN	⋆⋆	⋆⋆⋆	⋆	1	Desk	M+K	⋆	P
p2	5+	4	IN	⋆⋆	⋆⋆⋆	⋆	2	Desk	M+K	⋆⋆	P+D
p3	20+	2	FL	⋆⋆⋆⋆⋆	⋆	⋆	1	Desk	K	⋆⋆⋆⋆	P+D
p4	18	2	FL	⋆	⋆	⋆⋆⋆⋆	2d	Laptop	M+K	⋆	D
p5	10	5	FL	⋆⋆⋆⋆⋆	⋆	⋆⋆⋆⋆⋆	1	Desk	K	⋆⋆⋆⋆⋆	D
p6	10+	5	IN	⋆⋆⋆⋆⋆	⋆⋆⋆	⋆⋆	2	Desk	K	⋆	D
p7	20+	2	FL	⋆⋆⋆	⋆⋆	⋆	1	Laptop	K	⋆	D
p8	20+	1	IN	⋆⋆⋆	⋆⋆	⋆	2	Desk	K	⋆	D
p9	10	2	IN	⋆⋆⋆	⋆⋆⋆⋆⋆	⋆⋆⋆⋆⋆	1	Desk	K	⋆	p

Table 1: Participant details from left to right: years of experience (Exp.), number of languages (L.), Workplace (W.): in-house (IN) or freelance (FL), level of software knowledge (SW Kn.), level of received training (Train.), level of technical support (Support), number of screens used (Scr.), type of device (Device), dominant use of mouse (M) or keyboard (K), customization (Custom.), relative use of paper (P) and digital tools (D)

related or technical content, including insurance documents, technical manuals and legal text. For this type of translations, the use of TEnTs seemed to increase efficiency of the translators significantly, while some participants mentioned that more creative text such as advertisements are time consuming because of the creative aspects involved in those specific texts.

The nine contextual inquiries revealed current work practices and issues related to the translation process of language professionals when working with a TEnT. Table 1 shows the participants' years of experience (Exp.), the number of languages they know (L.) and their workplace (W.). We detected during the observations a limited software knowledge (Table 1, SW Kn.) by nearly half of the observed participants. Advanced features and customisation of the TEnTs were rarely used by many professional translators. TEnTs were seen by most of the participants as a complex tool to work with. Some explanations can be found in other observations: All observed participants had no or very limited training in working with the TEnT (Table 1, Train.), which can be related to the fact that their knowledge is limited. Most of them mentioned that they had no time to learn the more advanced features due to the workload and short deadlines. Furthermore, the majority mentioned to get limited technical support (Table 1, Support).

When considering the professional translators' use of hardware, we observed that the majority used a desktop computer (Table 1, Device). Although their software knowledge was often limited with respect to TEnTs, they very often used their keyboard for giving commands and navigating in TEnTs (Table 1, M/K). Only a few professional translators customized their TEnT (Table 1, Custom.), which was in line with their level of software knowledge with respect to heir TEnTs. Most of the language professionals preferred to use digital tools to support them during their translation job, while two of them preferred to use paper tools and two others use a combination of paper and digital tools (Table 1 P/D)

Besides these findings that mainly confirmed the need for customizable TEnTs, these contextual inquiries also provided interesting information regarding professional translators' work structure and profiles. These results were translated in workflow specifications and personas presented in the following sections.

4.3.1 Observed Workflows

Figure 5 shows the overall workflow of the observed translators (excluding p8). One thing that can be observed directly from this workflow specification is that these translators switch tools

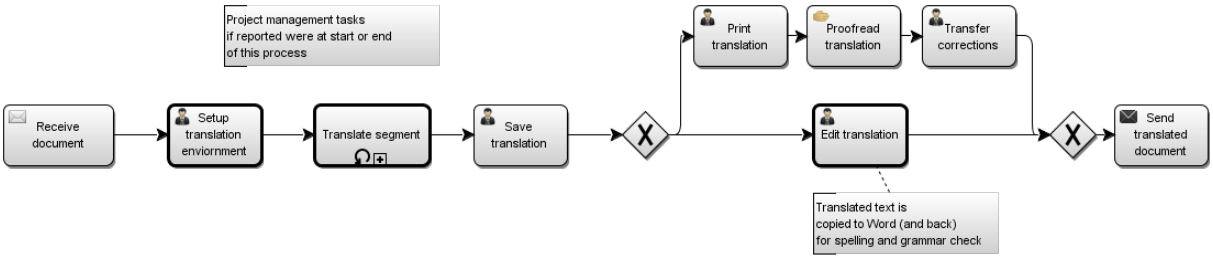

Figure 5: Observed workflow of translators represented in BPMN 2. Thick-bordered rounded rectangles indicate more complex workflows sometimes involving multiple tools.

or even medium (paper) to make corrections to the translated text. This work practice may have consequences on the quality of the translation memories and term bases if the translator does not transfer the corrections back into his translation environment too.

The more detailed flow for the *Translate Segment* activity is shown in Figure 6. A first thing to note is that none of the observed translators start translating from scratch, but editing translation suggestions coming from different databases, e.g. translation memories, term bases or customized machine translation engine. Translators also used several digital (e.g. parallel corpora, term banks, online dictionaries) or physical (e.g. specialized dictionaries) resources outside their the TEnT to find the correct translation.

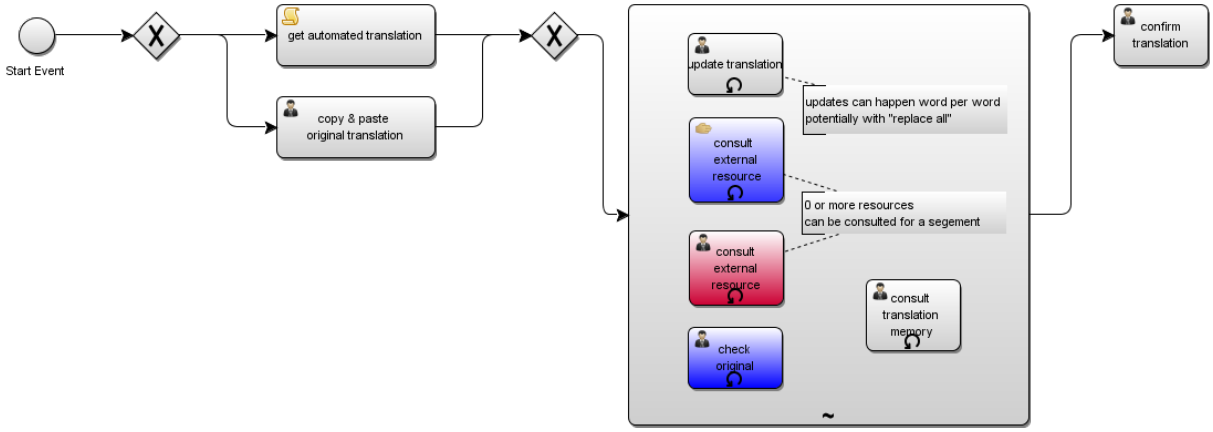

Figure 6: Observed workflow of translators for translate segment represented in BPMN 2. Gray background indicates TEnT usage, blue stands for other digital tools and red for physical tools.

4.3.2 Personas

Based on the workflows and profiles that were defined in the previous sections, personas (Pruitt and Adlin, 2010) were created. A persona is a hypothetical character which represents end-users. We distinguish two different types of TEnT users, which are considered in the two personas we defined. Each of them has specific characteristics related to the work practices during a translation job.

One persona is an in-house translator, less experienced with technology and using only few features of her translation environment tool. In addition, this persona has limited access to in-house TEnT training. In contrast, the second persona is a freelance translator, not only very passionate about linguistics but also knowledgeable about translation technology and terminology management, always seeking a way to improve his translation process. Table 2 shows an overview of the two personas based on their characteristics.

	Persona 1	Persona 2
In-house or freelance translator	In-house	Freelance
Experience (years)	20 years	25 years
Software knowledge	⋆⋆	⋆⋆⋆⋆⋆
Received training	⋆⋆⋆	⋆
Customization	⋆	⋆⋆⋆⋆
Dominant use mouse or keyboard	keyboard	keyboard
Relative use of paper and digital	paper	digital

Table 2: Overview of two personas of representative users of TenT

5 Recommendations

Based on the reported research and a literature study we propose a number of (tentative) recommendations that could positively impact translators workflows. These recommendations are based on the observed needs of translators and available or proposed solutions discussed in literature. These proposed solutions are not always validated with translators but in some cases with more representatives of computer users in general or, more specific, knowledge workers.

5.1 Improve Efficiency of TEnTs

As translators often work under time pressure, availability of efficient interaction techniques, such as keyboard shortcuts, is important. For some translators, however, the availability of keyboard shortcuts alone is not enough to discover them. They need to be made explicitly aware of the shortcuts. Awareness can be raised by tool-tips on mouse over. It is however known that it is better to work within a single modality (Cockburn et al., 2014). Showing multiple hotkeys when hitting the Alt key as is done for the Ribbon interface introduced by Microsoft could help the translator discover the hotkey he needs more quickly. ExposeHotkey (Malacria et al., 2013a) improves the efficiency of the Alt-key interface by having hotkeys organized in an always available flat hierarchy.

Even awareness may not be enough as people are known to stick with their current strategies, even when they know that these are not optimal (satisficing). This effect is well known to play a role in the limited adoption of shortcut keys by users even when having years of experience with a single tool (as is the case with TEnT users). Skillometers (Malacria et al., 2013b), widgets that present recent command selection speed versus the optimal speed, were proposed to contrast people's skill level with the optimal performance. A lab evaluation showed significantly increased shortcut key usage for the skillometer. Usage of hotkeys by peers is another factor that influences keyboard shortcuts. Command usage of peers can also be used to improve the recommendation of new commands to users (Matejka et al., 2009).

Interoperability of files and projects between TEnTs and between TEnTs and other tools should be optimised as translators and agencies use more than one tool during their projects.

5.2 Improve Effectiveness of Translation Environments

The translation environment includes not only the TEnT but also all other digital and physical resources used to make the translation. Effectiveness could be reached by better integrating online and/or physical resources (translation memory databases, dictionaries, reference materials) into the TENTs. TEnTs could be improved regarding the way in which results of machine translation are presented, as recommended by Green et al. (2013). They recommend that TEnTs automatically show translations for selected parts of speech (in contrast to dictionary lookup),

avoid predicting translation modes (within post-editing), offer full translations as references, use post-edit translations to improve machine translation.

The way in which feedback and contextual information are provided can benefit effectiveness. A lab study by Tsai and Wang (2015) found that both normalized BLEU scores (Papineni et al., 2002)[2] and social messages contributed to increased completion rate, a lower number of edits and better translation. Providing a visual context for the translation may also be beneficial for the localization of user interfaces as noted by Leiva and Alabau (2014). Similarly, Leblanc (2013) noted limited availability of contextual information as an issue for TEnTs.

The approaches discussed above all focus on the TEnTs. Effectiveness can also be improved by ensuring that all final translations are transferred in a (shared) translation memory. This especially a concern when a translation project is split over multiple translators as consistency in this case is a major concern. Translation agencies in our study prefer to only assign multiple translators to a single project when multiple translators have to work in parallel.

Effectively working in parallel requires that resources can be shared among the people involved and that people are aware of work of others and have informal communication channels. These are all things available within a single organisation as noted by Karamanis et al. (2011), but are missing for remote collaborators, such as freelancers. Doherty et al. (2012) further detailed practices with two language service providers and noted opportunities for future systems to increase awareness and visibility of the work of translators as well as to support discussion.

5.3 Enhance Usability of Translation Environments

Both the survey and the contextual inquiries revealed usability issues in the current TEnTs. Many of these issues can be resolved by following the recommendations of Lagoudaki (2009).

Our observations however indicate that usability issues go beyond the TEnTs as some translators struggle to effectively use different tools together on several levels. Some of these issues relate to compatibility of the file formats supported by these tools, but other issues relate to desktop management; finding ways to effectively use multiple tools for together for a single task.

5.4 Provide Control over Translation Environment

The limited software knowledge, the perceived complexity of the TEnTs and a dominance of self-training as a way to learn to use tools indicates that there is an opportunity for TEnTs to assist its users with learning new features or new ways of doing what they already know (e.g. learn to use more shortcut keys). As learning also has a short-term cost, it should be a feature that can be easily controlled by its users; a smart translation environment (tool) should assist the translator, but not take over. It should suggest improvements, not force them upon the user.

Specific activities in the translator's workflow may be supported through a specific combination of tools and/or configuration of the TEnT. Green et al. (2013) recommended that tools should not try to automatically adapt to a predicted activity as activities within a TEnT are interleaved. We believe that translators can best be supported beyond the TEnT as for different activities different tools are used and e.g. consistent spatial layout allows people to work faster as spatial memory can be used instead of visual search (Cockburn et al., 2014).

5.5 Addressing the Recommendations

Earlier work as well as our own user findings indicate that addressing these challenges of translation technology requires a more encompassing approach than incremental adaption of current TEnTs; it requires overcoming trust issues and overcoming satisficing of technological novices.

[2]The BLEU score is a simple metric to indicate quality of translation that correlates with human judgement.

We therefore investigate the possibility of activity-based computing (ABC) systems, such as cAM (Houben et al., 2012) to support translation professionals. ABC systems provide

> a computing infrastructure, which supports users to create, suspend, move, share, and discover computational activities.(Bardram, 2009)

Projects (or sub-projects) within the translation domain can be considered as computational activities in this definition. Key properties of ABC systems address issues such as awareness and (informal) communication as activities (project) are fundamentally considered to be collaborative undertakings with a common object.

An ABC system for translation technology would offer focused tools and resources to the translator and other stakeholder. As the used tools within this domain significantly differ for the different stages of the translation process, it may be useful that the ABC system offers dedicated support for these stages including the assistance for coordinated use of multiple tools.

At the level of the TEnT, we especially look at the visualisations that support raising awareness of contributions of the different users towards the overall project. These visualisations may be focused on a single segment but may also provide more insight on the relation of the segment to the overall project. Visualisations could concern the whole project even if the details of the project are not fully accessible to some users. Such restricted access may be required to include all contributors to the project, such as freelancers, which are frequently used by language service providers to carry out translation projects.

6 Conclusions

In this paper, we have described the results obtained from a user study we undertook in the framework of the SCATE research project. The survey of language professionals and the semi-structured interviews with representatives from the translation industry provided an update on translators' working environment and tools they use as well as a list of requirements that would optimize translators' tools. In addition, the nine contextual inquiries gave us the opportunity to take a closer look at the human-computer interaction aspects and identify usability issues and gaps in the current workflows.

All the results led to a tentative list of recommendations for the improvement of the future TEnTs and more broadly the computational environment (translation environment) in which they will be used. We believe these recommendations can assist the TEnT developers in making decisions on the evolution of their software. The insights from our studies and the recommendations can also be used by researchers, language service providers and translator trainers to improve translation environments beyond the TEnTs.

Acknowledgments

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A Features to be added or improved according to survey respondents

Machine translation	Automatically fix fuzzy matches Auto-suggest
Terminology	Concordance features Handling of terminology (plurals) Terminology consistency Term extraction Corpora management Ontology management Sentence/phrase-based terminology
Usability	Automatic propagation of numbers, adaptation of table direction Automatic replacement of terms found in source text Drag-and-drop of text within editor Copy/paste More editing space No codes / tags in text WYSIWYG editor (for common tags) Speed of selection of glossaries and TMs, TM retrieval Search in online help
Interoperability	Search in online databases External spell checkers Import bi-lingual or multi-lingual terminology files Import aligned docs in TM Standardized TM format Integration with Dragon Naturally Speaking (Speech to text) File import / conversion OCR (of PDF)
Project management	Direct quotation and invoicing Translate to more than one language in one project Time tracking (per translation unit)
Customization	Custom keyboard shortcuts (for cross-tool consistency) Custom background colors
Dependability	Offline editing in cloud-based tools Better communication (channels) with tool developers Spell checkers Bugs: in core features (e.g. glossary merges, generation of translation units) False errors/warnings
Flexibility	Do not require features that are not always necessary (e.g. return packages) Editing of source document Flexibility in segmentation Sub-segment markup, lookup and inclusion of results Tracking of uppercase and lowercase No (artificial) limits on number of TMs and glossaries

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