

**GETTING MORE THAN YOU PAID FOR?
CONSIDERATIONS IN INTEGRATING FREE AND LOW-COST
TECHNOLOGIES INTO TRANSLATOR TRAINING PROGRAMS**

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Abstract:

Translation technologies are now an integral part of most translator training programs, and recently, a number of free and low-cost translation tools have begun to appear on the market. Because translator training programs typically have limited budgets, such software has great appeal. However, before adopting these tools, trainers must consider a range of questions, including practical issues, such as laboratory management and language considerations, as well as more pedagogically-oriented questions, including academic priorities, market needs, and possibilities for a wider integration of technologies into translation programs. This paper will explore such questions, and will introduce the Collection of Electronic Resources in Translation Technologies (CERTT) Project, discussing ways in which CERTT could potentially help to maximize the benefits of incorporating free and low-cost software into translator training.

Key words: translator training, translation technologies, free and low-cost software, open-source software, CERTT Project

0. Introduction

Two technological trends have converged to create an interesting and dynamic situation for translator training. Firstly, there is an increased use of computer-aided translation tools, and particularly of translation memories (TMs), in the translation profession. At the same time, there is a growing interest among the general population in using a variety of free and open-source software packages. Now, with the emergence of a number of free and low-cost TM tools, translator trainers are being called upon to decide whether (and if so, how) to integrate such tools into training programs.

0.1 Increased use of CAT tools in the translation profession

The role of technology is increasing in the translation profession. Industry surveys, such as those conducted by Lagoudaki (2006) at Imperial College or by professional translators associations such as the *Ordre de traducteurs terminologues et interprètes agréés du Québec* (Gauthier, 2006), show that tools – and especially TMs – are being used by a growing number of translators. Job advertisements for translation-related positions are increasingly seeking candidates with a range of technological skills (Bowker, 2004), and discussion forums on translation portals such as Translators' Café and ProZ frequently compare the merits and limitations of various translation tools. Meanwhile, publications such as *MultiLingual*, a magazine targeted at language professionals, are filled with advertisements and product reviews for a range of computer-aided software packages.

The vast majority of translator training programs have acknowledged the place of tools in the profession by incorporating some type of technology training into the curriculum. However, successfully introducing such training into a translation program does entail overcoming some challenges, not the least of which is being able to afford to purchase and support these tools (Declercq, 2006: 125). Could free technologies be the answer?

0.2 Growing interest in free and open-source software

In recent years, there has been a growing appetite among computer users for various types of free and open-source software¹, including operating systems (e.g. Linux), web browsers (e.g. Mozilla Firefox), databases (e.g. MySQL), and general office software, such as word processors, spreadsheets and presentation software (e.g. Open Office). The popularity of these products appears to be steadily increasing (Paul, 2006: n.p.), and some have even gained a significant share of their respective markets. While the draw for some users is cost savings, a 2005 survey from the research firm IDC reveals that many European companies are adopting open-source software “on the grounds of quality and flexibility, rather than merely considering it ‘good enough’ because it is inexpensive” (Broersma, 2005: n.p.).

Another 2005 survey, this one conducted by Open Source Development Labs (OSDL), indicates that another driving force behind the adoption of open-source products in

¹ Open-source software is generally understood to be software that is freely distributed and whose underlying computer code is accessible, which permits users to use, change, and improve the software, and to redistribute it in modified or unmodified form. It is very often developed in a public, collaborative manner.

companies is employee demand, which placed at the top of the list of reasons for choosing open-source solutions (Paul, 2005: n.p.).

0.3 Demand for integrating free tools in translator training programs

An interesting parallel is now beginning to emerge at translator training institutes, where trainers are being called upon to consider implementing open-source solutions not only to address budgetary constraints, but also in response to student requests. Because many translation programs currently use proprietary software, students are typically required to go the campus computer labs to work on their homework or assignments. However, such labs are frequently in high demand for teaching during the workday, and they usually have restricted hours in the evenings and on weekends, which is often the time when students wish to do their homework. Students would prefer to be able to install the software on their home computers so that they can work without being constrained by the availability of the computer lab; however, the licensing schemes of most proprietary software products do not permit this. In addition, since students' home computers do not necessarily operate using the same platform as the one found at the computer lab, students are seeking software solutions that are portable, such as those offered by open-source products.

As of quite recently, the possibility of incorporating open-source solutions into translation programs is an option that trainers can consider since a number of free (or relatively inexpensive) translation tools, including TMs, have now started to appear. Nevertheless, the decision to integrate such tools is not a trivial one given that it has the potential to impact a translation program in a number of ways. Before adopting free or low-cost software, trainers must consider a range of questions, including practical issues, such as budgetary considerations and laboratory management issues, as well as more pedagogically-oriented questions, including academic priorities, market needs, and possibilities for a wider integration of technologies into translation programs. This paper will explore these questions, and will introduce the Collection of Electronic Resources in Translation Technologies (CERTT) Project, discussing ways in which CERTT could potentially be able to help maximize the benefits of incorporating free software into translator training.

1. Practical considerations

Among the first issues to be addressed when integrating any technology into an academic program are the practical ones, including those relating to budgeting and to management of the computer resources. The following sections will explore these questions with regard to the integration of free, low-cost or open-source software in translator training programs.

1.1 Budgetary considerations

It is no secret that institutes of higher education seem to be chronically short of funds (e.g. O'Brien and Kenny, 2001: 22; Bowker, 2003: 76; Declercq, 2006: 131), and programs in the arts and humanities often seem to be harder hit than their counterparts in science and engineering (CTISC, 1999: 32). As Rogers (2001: 20) quips, the question

“Who needs lots of space, equipment and technical support to teach ‘arts subjects’?” represents a view that is deeply embedded and hard to shift.

Tools such as TM systems have traditionally been quite costly. In recent years, these costs have come down significantly, but they can still be prohibitive to an educational institution and can result in tools either being excluded from the curriculum or being offered in only a limited way. For instance, as noted by Groethuysen (2001: 18), describing the situation in 2001 at the Sprachen- und Dolmetscher-Institut in Munich, a lack of licences meant that a module entitled “Tools for Translators” could only be offered at the post-graduate level, where class sizes are presumably smaller than at the undergraduate level.

Of course, many commercial vendors have begun to offer educational discounts for universities. While these are very welcome and can certainly help to mitigate costs, they do not eliminate this factor altogether. In particular, it is important to note that purchasing many of these products is not simply a one-time cost. If it were, a translation department could imagine spreading out the cost over a number of years (e.g. buying 5 licences per year, or buying licences for Tool A in one year, and licences for Tool B the next). However, the costs typically include a mandatory annual service contract, which itself is often priced between \$1000 and \$2000 per year for each tool. This type of ongoing financial commitment seriously curtails the number of different proprietary tools that a translation program can include among its resources. This is true even in relatively “wealthy” institutions, and it is even more of an issue in institutions in less wealthy or developing countries, for example. Moreover, as noted previously, licenses purchased for translation programs generally apply only to their use in computer labs on campus, and therefore exclude use by students on their own computers at home.

Clearly, the option of expanding the resources available to students by including free software is an attractive proposition. From a purely budgetary point of view, it seems like a good decision. But is there really such a thing as a “free lunch”? Should trainers be on the lookout for hidden costs, even if the price tag reads \$0.00?

1.2 Laboratory management issues

One of the “costs” of implementing free software may come in the form of extra time and effort required for technology management in the computer labs. As pointed out by Declercq (2006: 131), “it seems unlikely that IT [information technology] support in an academic environment can resemble that in a company setting (there simply are more holidays involved, smaller budgets and usually shorter working days as well).”

In addition, as pointed out by Rothwell and Shuttleworth (2001: 15), installing and maintaining any kind of translation technology software in an academic lab is challenging because the labs are set up differently than computer networks in typical companies, and the software was designed to work in the latter environment rather than the former. Accordingly, Rothwell and Shuttleworth (2001: 15) caution that setting up an academic lab to run translation technologies places “extremely heavy demands on technical support staff” and “the difficulties involved in getting it right should not be underestimated.”

Of course, this is true of any software, not just open-source products. However, in the case of commercial products, some degree of technical support is usually provided by the vendor (assuming, of course, that a service contract or maintenance agreement has been purchased). However, with free and open-source software, the options for technical support come in a different form, often via an online discussion group or forum, where users of the product typically support each other, giving tips and suggestions for dealing with problems. While there is certainly an air of collegiality among group members, generally coupled with a willingness to share information, there is no obligation to do so and no guarantee that any given user has run into the same problem as another user. There may also be options for reporting bugs to the developers, but the response time for dealing with these issues may be slower than for many commercial products. Therefore, when problems arise, the lab manager must be willing to invest time to find a solution, rather than depending on an external technical support person to come in and rectify the issue. In addition, when the software in question is specialized – such as TM software – the translator trainer who is using the tool must often be actively involved to help support the lab manager given that latter, who is not usually a translator, may not actually be familiar with the way the software is supposed to work, and may not speak the language in which the interface (including error messages and help files) is written.

Furthermore, while much open-source software is of extremely high quality, other products may potentially contain bugs. Since the programs are developed by “volunteers” and are often the result of collaborative efforts, the strict quality control measures that are in place in commercial ventures may not be as easy to set up or enforce when working in an open-source framework (Sherriff, 2007: n.p.). On the other hand, since any user of open-source software can adjust the code as needed and distribute a “repaired” version, these problems may be dealt with fairly rapidly, and in some cases even more quickly than similar issues in commercial products. Of course, this would depend on the user being a knowledgeable programmer, which may not necessarily be the case for all translators or translator trainers.

An additional challenge that can arise when integrating open-source software into a computer lab is that the installation of the specialized software (e.g. TM system) may necessitate the installation of other more general software (e.g. word processor). For instance, in order to use the open-source TM system Omega-T, it is necessary to also install Open Office. As computer labs generally have proprietary products such as Microsoft Office already installed, this can increase the number of programs fulfilling similar functions that are required on lab computers. As more and more software is installed in the computer lab, conflicts (e.g. keyboard shortcut conflicts) may arise between the different programs. Moreover, the sheer number of programs installed on lab computers may make it more difficult for less experienced users to find the tools they need and/or to choose the best programs for use in specific situations, and to ensure compatibility with other users.

1.3 Language considerations

The language of the interface must also be considered when choosing a tool for use in a lab environment as the availability of interfaces in various languages may have an immediate impact on users' experience with tools. In a commercial setting, a tool is localized to reach new target markets and inevitably make a profit. As such, tools are more likely to be localized into languages that are widely used. Conversely, open-source tools are localized by volunteers who are self-motivated to localize the tool into their own language(s). While this may result in more widely localized products, there are no financial resources dedicated to the development of localized tools within the open-source framework.

Moreover, the language of supporting documentation (user guides, tutorials, help files) should also be taken into account when choosing a tool. While translators are able to read in more than one language, the comfort of being able to access tools' options and documentation in one's own language can make the experience of using a particular tool far more pleasant, and can shorten the learning curve. Our personal experience with students has left no doubt that these new users of tools in particular show a very strong preference for using tools and documentation that allow them to learn in their own language.

While there may be no identifiable trend for quantity of localized open-source tools versus commercial tools, some examples may demonstrate the current multilingual situation of a few tools. Microsoft Office 2007 is available fully localized in 37 languages (Microsoft Unlimited Potential 2008) and Microsoft currently offers another 17 Language Interface Pack (LIP) downloads (Microsoft Office Online 2008). OpenOffice is localized into 21 languages, with ongoing projects in nearly one hundred languages and dialects (OpenOffice 2008). This is a fair comparison given that Microsoft Office was first released in 1983 and OpenOffice v.1.0 was not available until 2002. SDL Trados, one of the leading (and more expensive) commercial TM tools presently provides the user interface in four languages, while Omega-T, a popular open-source TM tool has been localized by volunteers into 20 languages, with additional language versions in progress (Prior, 2008).

2. Pedagogically-oriented considerations

Even if solutions can be found for practical constraints, the decision about whether or not to incorporate free software into a translation program remains far from trivial. The following sections weigh a number of more pedagogically-oriented considerations.

2.1 Balancing academic priorities with market needs

It is clearly important for translator training institutes to turn out graduates whose overall skill set is in line with the needs of the market; however, this market is somewhat volatile, so technology training cannot be set up solely to address the latest trends but must take a more balanced approach that includes providing students with transferable skills, such as the ability to engage in critical analysis and problem solving.

2.1.1 Different training needs for different types of employment

It is clear that translation technology cannot be taught or understood in vacuum, so translator training programs must include practical experience with tools in order to support theoretical understanding. This practical experience may in turn stand students in good stead as they reach the job market. However, in many cases, the pertinence of hands-on training for future work will depend on the ultimate employment of translation graduates.

Surveys of technology use have highlighted some variations in the use of TMs in different user groups. Surveys conducted by the *Association of Translators and Interpreters of Ontario (ATIO)* of independent (ATIO 2005) and salaried (ATIO 2007) translators showed a substantial difference in responses, with 44% of salaried translators reporting using TM tools, 27% of independent translators working in Canada's official languages indicating TM use, and a similar proportion of freelancers working in other languages.² In her survey, Lagoudaki (2006: 19) observes that the vast majority of the freelance respondents who used translation memory tools did so by choice, with much smaller proportions required to by the translation agencies they worked for and even fewer by their clients, while considerably more of the company employees were required to use these tools by the translation agencies they worked for. Citing Lommel and Ray's survey (2004), Lagoudaki (2006: 15) also notes that companies are more likely to be open to TM use than individual users, given their potential for cost-savings and productivity gains. It is nevertheless difficult to generalize about TM use by freelancers and how it differs from use by companies: reported levels of TM use for freelancers responding to surveys range from 27% (ATIO, 2005: n.p.) or 28% (Fulford and Granell-Zafra, 2001: n.p.) to 81% (Lagoudaki, 2006: 15), depending in part on the context of the study, and Lagoudaki's own data do not reveal large gaps in the proportions of company employees and freelancers responding to her survey who used TM tools, with 84% of company employees and 81% of freelancers reporting using them.

Moreover, those who work as freelancers will likely be best served by experience with different kinds of tools and functions — and in fact, may ultimately need almost a different technological skill set — from those who go on to work for large corporations, or in the public sector. Clearly, the scope of projects undertaken and the complexity of workflow (including among other factors the size and structure of a documentation/translation team and the volume of translation carried out) will play a large role in the selection of a TM system. Thus, the student who goes on to work in a freelance environment may benefit most from experience with central TM functions, while those who ultimately work with translation agencies or in larger documentation and translation environments may need to become more familiar with project and TM management functions that freelancers are more rarely called upon to use.

In addition, while those working in larger organizations may have easily available technical support for many applications including TM systems and the management of TMs themselves, freelancers generally need to manage their own technological environments independently. For these users, the challenges of installing, updating,

² However, approximately 40% of the independent respondents in both language groups did not answer this question, which makes interpreting the data difficult.

managing and using more complex programs may outweigh the advantages of the additional features they offer.

Thus in a single translator training program it is extremely difficult to meet the specific needs of all future translators. This is particularly true as during their training, many students may not yet have a clear idea of the type of job that they will eventually have. For example, in two surveys of members of the University of Ottawa's School of Translation and Interpretation community (mainly students) carried out in 2007-2008 as part of the CERTT project, over 20% of respondents (23 of 102 respondents in one survey, and 7 of 34 in the other) indicated that they were unsure of their future working situation. Moreover, many will likely work in multiple contexts (either consecutively or simultaneously).

2.1.2 Number of tools

Another question that may be raised is how many products representing any one tool category a translator training program needs to provide or teach. As noted by Rothwell and Shuttleworth (2001: 16), there is now such a bewildering variety of tools available that it is clearly not feasible to cover everything, so trainers must be selective in what they choose to incorporate into their courses. As part of that decision process, translation technology trainers such as O'Brien and Kenny (2001: 22) have pointed out that one of the main challenges is the so-called "skills versus knowledge" debate. In other words, should a university course attempt to train translators how to use the leading TM tools on the market (e.g. to increase their chances of employment)? Or should it aim to impart knowledge of the technology in a more generic way in order to equip students with the ability to evaluate and to learn to use such tools themselves? Most trainers seem to lean towards the latter approach, recognizing that tools that are popular today may well be out of fashion tomorrow. Clearly, this argues against focusing on a single tool for training purposes. Moreover, there is a good argument to be made that having a minimum of two to three tools available for observation makes it much easier to distinguish the basic features of the tool type in general from the quirks or options of an individual product.

Undoubtedly, a fundamental understanding of the underlying concepts and principles, as can be obtained from studying a small number of TMs, is essential. However, as pointed out by Yuste (2001: n.p.), "ideally, any training programme should be flexible enough to adapt to evolving commercial needs." In the case of translation technology, there would seem to be at least two further arguments to be made in favour of exposing the students to an even wider selection of tools during the course of their training. Firstly, as noted above, there are a plethora of tools available on the market today, and even if a translator is in a position where he or she is able to work with only a single tool, it will first be necessary to select this tool. Deciding which tool can best meet the needs at hand is a task that can be facilitated through a comparative evaluation. Therefore, if translators are going to find themselves needing to conduct such comparative evaluations, they will be better equipped to do so if they have previously been given the opportunity to gain such experience by evaluating and comparing a selection of tools as part of their training.

In addition, the reality of today's market would seem to be that translators typically need to be comfortable using multiple tools. A 2006 survey of 874 TM users revealed that "The majority of TM users use multiple tools [...] In general, TM users use from 1 to 8 tools" (Lagoudaki, 2006: 23). The survey went on to show that, on average, freelancers used 3.23 different TM tools, while translators working for companies used an average of 3.46 different TMs. Vallianatou (2005: n.p.) confirms this as she reports on her own experience as a freelancer using three different TM tools. Interestingly, Lommel and Ray (2004: 12) observe that the likelihood of using multiple tools increases the longer a translator has been working, with translators who had been employing TMs for more than five years using more than twice as many tools as those who had been using TM for less than a year. If students will be faced with the need to use more than one TM in the workplace, then they will surely benefit from having the chance to learn and experiment with several as part of their studies. In addition, the more exposure they have to TMs, the less likely they are to be naïve users once they enter the workforce (Dillon and Fraser, 2006: 75).

If the cost of purchasing multiple TMs is prohibitive for a translation department, one option may be to try to incorporate the use of demo versions of these tools. Most commercial products do create and distribute demo versions with a view to allowing potential clients to have an opportunity to test and evaluate the tool before committing to it. However, these demo versions are often restricted in some way (e.g. time-limited versions, limited functionality), which may hinder their usefulness as a teaching tool (CTISC, 1999: 33). Depending on the way in which the functionality is limited, it may be more or less feasible for a demo version to be usefully incorporated into a training program.

It may be more attractive for an educational institution to turn instead to freely-available TM products, such as Omega-T, MemoQ or Wordfast³, and to incorporate these into training programs. In this way, students can be introduced to a wider range of TM products and can have the opportunity to learn multiple tools and to comparatively evaluate them.

2.1.3 Learnability and comprehensiveness

Additionally, there is some evidence to suggest that if more than one TM tool is to be learned, it may make sense to begin with one of the free tools. As several trainers logically point out, translators with strong basic computer skills can more easily graduate to using complex software (Biau Gil, 2006: 93; Dillon and Fraser, 2006: 76; Lagoudaki, 2006: 16).

As observed by Lagoudaki (2006: 25) Wordfast seems to be "significantly preferred by low-tech users"⁴, and it also demonstrated a higher satisfaction rate over its competitors in the categories of usability and learnability (Lagoudaki, 2006: 28). Similar

³ Note that for working translators, Wordfast is not completely free; however, at a cost of 250 euros for a single licence, it is considerably less expensive than many of its competitors. Moreover, it is available for no cost to educational institutions, which means it can be considered as a "free" tool for training purposes.

⁴ That is, by respondents who describe themselves as having "adequate" computer usage competence levels rather than "good" or "excellent" computer skills (Lagoudaki, 2006: 25).

observations about the ease of use and learnability of Wordfast were made by Garcia (2003: n.p.).

This raises the question as to whether the free and low-cost tools are easier to learn simply because they integrate fewer extra features than the bigger commercial packages. Indeed, functions intended to assist in managing complex workflow, dealing with heavily coded documents, and other similar tasks are integrated into a number of commercial packages (e.g. SDL Trados), but are less often included in free and low-cost products.

In certain cases, this simplicity is in fact an advantage; many newer users may be less intimidated by a “core” TM package containing only the main functions that they are likely to use than by a product that includes numerous additional programs whose uses may be more or less clear. Moreover, the volume of accompanying documentation for these programs is also likely to be more manageable for a new user, such as a student, when the product itself is more targeted to specific, translation-centred functions.

Nevertheless, once users become more comfortable with the use of such tools, or once they enter the workforce and find themselves working in specific contexts or for clients that require more advanced functions, they may eventually regret the absence of some of these more “peripheral” tools, or the necessity of adding another tool to their repertoires in order to have access to them. However, as noted above, evidence from the literature (e.g. Lommel and Ray, 2004; Lagoudaki, 2006) would seem to suggest that it is rarely enough for a translator to be comfortable using only one tool, regardless of whether it is an open-source system or a commercial product. The general consensus seems to be that every tool has its strengths and weaknesses, and the choice of which one to use depends on the job at hand. Still, the fact remains that if multiple tools must be learned, there is a certain logic to learning the most straightforward tool first and working up to a more complex system, and the free and low-cost tools available today would seem to be among the simpler tools.

2.1.4 Use in the market and perceptions of potential employers

As to the question of whether the use of free tools will expose students to products that are actually relevant in the marketplace, the answer would seem to be ‘yes’. In the 2006 TM survey, the list of the most widely used systems⁵ included two free/low-cost tools: Wordfast placed second on the list with 29% of participants claiming to use it for some of their work, while Omega-T placed eighth with 7% (Lagoudaki, 2006: 24).

In addition, Lagoudaki (2006: 26) goes on to note that when respondents were asked to select a single TM system that they use most often, the free/low-cost tools again fared well with Wordfast placing second once more (17%) and Omega-T rising to sixth place (3%). Furthermore, it is interesting to note that the rising popularity of free/low-cost tools is a trend that has now been in evidence for several years: in a 2004 survey of 274 TM users, Lommel and Ray (2004: 12) reported that Wordfast placed sixth (18%) and Omega-T placed tenth (4%) on a list of the most-used TM tools.

⁵ In response to this question, survey participants were allowed to select more than one tool.

The fact that these free/low-cost tools figure among the most popular and frequently used TMs on the market could possibly be attributed to the fact that cost plays an important role in the choice of tool – particularly among freelancers⁶, which is not a negligible market⁷. However, it is highly unlikely that translators would use a tool that did not help them to increase productivity and quality, even if the tool in question was free. Indeed, as reported by Fulford and Granell-Zafra (2005: n.p.), who surveyed 391 freelancers in the UK,

the freelancers demonstrated a cautious and, in ICT [information and communications technologies] strategy terms, a quite mature approach to ICT adoption. There was little evidence of technology being adopted ‘just for the sake of it’ or ‘just because it was there’, an approach conventionally thought of by ICT strategists as immature. For many in the sample, it seemed that their guiding principle was to ensure that ICT adoption improved their efficiency and productivity.

Therefore, it would seem that, as was the case with the more general open-source software discussed in the introductory section, these free and low-cost tools have also achieved a level of quality and effectiveness that allows them to compete with commercial products and to earn a good reputation among users.

However, moving away from the situation of freelance translators and considering the market for salaried translators, the perception of free and low-cost tools by potential employers is a relevant concern when it comes to conducting training using less commercial products. As discussed above, the best way to balance the need to teach skills in using tools at a practical level and the need to impart knowledge at a more theoretical level is the subject of ongoing debate. Nevertheless, most will agree that no program could be complete without components of both hands-on tool use and theoretical understanding and evaluation, and that practical experience with a tool can only be an asset in the eyes of employers who wish to minimize the costs of training new employees.

While free and low-cost tools can often be of similar usefulness for imparting knowledge about the basic principles behind the development and use of translation tools such as TM systems, experience with smaller-scale free and low-cost tools is nevertheless not as likely to be of as much interest to employers as more commercial tools, given that larger employers (often those who are most likely to use TMs in general) will probably require features such as networking ability and management of large TM databases and complex workflows that are less often available in free or low-cost tools.⁸

⁶ As noted by Garcia (2003: n.p.) and Lagoudaki (2006: 24), Wordfast is very popular among freelancers.

⁷ For example, in a survey of the Canadian translation industry, the CTISC (1999: 11) reported that approximately 38.4% of translators worked as independent translators rather than for a company. In addition, Dillon and Fraser (2006: 72) and Gauthier (2006: 12) both observe that some translators who are company employees may also do some freelance work on the side, and 35% of the respondents in the ATIO (2007) survey of salaried translators also reported freelancing.

⁸ Evidence of this attitude may be seen indirectly in the fact that, as reported by Lommel and Ray (2004: 13), TM users who had a high volume of translation and large TM databases (i.e. larger employers) tended to use more sophisticated commercial systems (e.g. STAR Transit), while those who used free or low-cost tools (e.g. Wordfast) had a lower translation volume and smaller TM databases. Additionally, as previously noted, it is among freelancers, rather than larger employers, that free and low-cost tools seem to be most popular.

Because of this, although students who have used free or low-cost systems may have acquired the same basic knowledge of the principles of TM use as those who have used large commercial systems, employers may recognize the value of their practical experience less clearly than if they had used a well-known commercial tool (even if it is not the same tool they themselves use).

This difficulty is one that is hard to avoid entirely, but may be mitigated somewhat by offering students the opportunity to become familiar with both types of tools, commercial and free or low-cost. Although students may gain a substantial portion of their experience with the latter type of tool, the chance to try a commercial package and to make a relatively structured comparison, guided by resources to help point out parallels and differences, should enable them to discuss these factors with employers and to be aware of the strengths (and limitations) of their experience in terms of their employer's technology needs.

2.2 Possibilities for better integration of technology into the training program

In addition to being affordable and relevant to the market in general, free and low-cost TM systems offer other advantages to translator training programs that cannot easily be obtained through exclusive use of more expensive commercial products. For example, it has been noted by numerous researchers (e.g. Rothwell and Shuttleworth, 2001; Yuste, 2001; Bowker, 2003; Kenny, 2007), that students would benefit from having translation tools integrated more fully across the translation program rather than using such tools solely in the context of a core course on translation technologies. However, these researchers have also noted that such integration brings with it a host of challenges.

2.2.1 Differing comfort levels with technology

One challenge that has been observed is that different students arrive in the classroom with different comfort levels with technology ranging from near neophyte to technophile (Rothwell and Shuttleworth, 2001:15; Arrouart, 2003: 478-479).

Similarly, not all of the trainers who teach practical translation courses may be comfortable using these tools (Arrouart, 2003: 478; Bowker, 2003: 74; Jaatinen and Jääskeläinen, 2006: 84; and Kenny, 2007: 203). As observed in the results of the 2006 eCoLoTrain survey, which set out to uncover the perceptions and requirements of translator trainers with regard to translation technologies, although most respondents support the inclusion of technology in translator training programs, the majority feel that they themselves would require further training in order to become highly proficient users (particularly in the case of specialized software), and especially in order to be able to instruct others (eCoLoTrain, 2006: 20).

Because TM systems can appear quite complex when they are first introduced, beginning TM training with a tool that is user-friendly and intuitive could be a logical choice. As noted above, the low-cost tool Wordfast compared very favourably to its competitors in the categories of usability and learnability (Garcia, 2003: n.p.; Lagoudaki, 2006: 28).

2.2.2 Accessibility, portability and exchangeability

Even if a trainer does feel competent using such tools, another factor that may limit the possibility of allowing students to use TM tools in practical translation classes could be that such classes are not typically taught in a computer lab. As noted above, faculties of arts and humanities usually have limited resources, so the vast majority of classrooms that are used for teaching are not equipped with workstations for each student.

To get around potential problems of trainers not feeling comfortable with technologies and of classes not being taught in labs, it may be possible to encourage students to use TMs or other tools to do their homework and assignments. Once again, however, accessibility to a computer lab could be a problem, since such labs may have restricted hours in the evenings and on weekends, which is often the time when students wish to do their homework.

Free TM tools offer a way for students to make greater use of TM technology throughout their studies. As noted in the introductory section, because these programs can be installed on their personal computers, students can use the tools when doing homework, or simply for additional practice time, without being constrained by the availability of the computer lab. Trainers, too, can take advantage of the opportunity to install the software on their personal computers, which may afford them greater flexibility for accessing the software as well as allowing them the opportunity to thoroughly explore the tool before deciding whether it is worth incorporating into the training program, and if they choose to do so, to create and test resources for students to use with the tools, where required.

In this regard, another benefit of free tools is that they tend to be more portable than many commercial products. As pointed out by Lagoudaki (2006: 25), among the TM survey respondents who used a platform other than MS Windows, Wordfast was the most popular TM (27%) and Omega-T placed second (15%). Portability is an important consideration for students or trainers who wish to work at home since many of them use a non-Windows platform (e.g. Macintosh, Linux). Being able to install the free TM products on their preferred platform will likely lead to an increased uptake of the tools in translation work.

Another possible advantage of encouraging students to begin using TMs more extensively is that it would allow them to start building their TM and terminology databases early on, before they even get started on their career. As noted by Fulford (2001: 228), one obstacle that hinders established translators from adopting TM technology is the difficulty of transferring legacy translations (i.e. those created outside a TM environment) into a TM database. Encouraging students to get into the habit of using a TM early on will hopefully mitigate this problem. Moreover, even if translators end up switching from using a free TM system during their student days to using a commercial product after graduation or later in their career, or if they end up using multiple tools, it is becoming increasingly easy to transfer TM databases and termbases between different systems – including between free systems and commercial products – without a great loss of time or investment of effort.

This exchangeability may equally make it possible for a translator to continue using a free or low-cost tool, even when a client wants information that can be used in the proprietary format of a more expensive commercial tool (Garcia, 2003; Prior, 2005; Hay, 2007). This is important because it may be extremely expensive and time consuming to buy and learn all of the TM tools needed to meet clients' demands. Moreover, individual translators often have personal preferences for one tool over another. With increased exchangeability, users are far less likely to find themselves "locked in" to a system that they find does not meet (or no longer meets) their needs. Translators may be able to choose to work in the system (or systems) that best suit them while still having access to data — such as TMs or termbases — in the format the client provides. (If they choose to provide clients with uncleaned translation files, updated TMs or termbases, they can also often do so.) This becomes increasingly useful as the number of clients a translator works for — and potentially the number of different systems these clients use — increases.

"Trados compatibility" is currently a much-discussed issue among translators, especially those working in the freelance market. Developers of low-cost TM tools are working on offering compatibility (Omega-T for example (Prior, 2005: n.p.)), and some such as Wordfast (Champollion, 2008: n.p.) already claim to be Trados compatible. Thus, if free and low-cost tools are made compatible, translators will have more freedom to choose the tool that fits the requirements of their clients, their budgets and their preferences.

At a practical level, this exchangeability may even contribute to increasing the use of TM tools by students during translator training. Students may be able to work with commercial products in laboratory settings, and import these files into free or low-cost TM systems that they can use at home, and perhaps even transfer files back into the original system when they return to the laboratory. This process is certainly not without its challenges; however, from observations of comments by working translators (e.g. on discussion boards), it is a practice that is far more common than one might expect, and one that translators who plan to use TMs in their work may do well to become comfortable with as early as possible.

One approach to ensuring this exchangeability has been the development and implementation of standard formats, including TMX (Translation Memory eXchange) (LISA, 2005) and TBX (Term Base eXchange) (LISA, 2007), which have been supported by the Localization Industry Standards Association (LISA). Meanwhile, another form of open standard, SRX or Segmentation Rules eXchange (LISA, 2004) appears to be growing in popularity. It was ranked as the most important development issue in the 2004 survey by LISA (Lommel and Ray, 2004: 18) and also was indicated as a priority for research and development by the respondents to Lagoudaki's survey (2006: 29). SRX works similarly to TMX and TBX standards, allowing the exchange of segmentation methods of tools in order to improve effective use of TMX files. It thus appears that standards intended to increase compatibility between tools are of interest to users and that the need for resources to facilitate exchange of data between systems remains a central concern in the field.

2.2.3 Reinforcing core competencies and offering additional opportunities for learning

A number of translator trainers have pointed out that integrating translation tools into a wider range of translation courses does not necessarily detract from the competencies being taught in those courses. Observations include the fact that using TMs forces students to contemplate issues such as text type (Ahrenberg and Merkel, 1996: 185) or the fact that students must still go through the hypothesis selection and solution-selection cycle before they can commit their best translation to the TM database (Kenny, 2007: 198). Some trainers (e.g. L'Homme, 1999: 118) confirm that students who use technology to help find translation solutions are still reinforcing basic translation skills as well as developing good and realistic working practices that can later be applied in the workplace. Meanwhile, others have even noted that TMs and related tools may facilitate the acquisition of more theoretical as well as practical translation skills (e.g. Shih, 2006).

While these are good reasons for encouraging students to use TM systems and to build up TM databases as part of their practical translation classes (including homework), it is worth remembering that the types of texts translated in an academic context are sometimes quite different from the texts that will be encountered in the workplace (e.g. they are often extracts from longer texts and may have been selected to highlight a particular problem). In their courses, students also deal with a wide range of subject fields (e.g. technical, economic, legal and medical translation), not all of which may be relevant to their eventual career. In addition, students are still in training, and their work may therefore not be of a sufficiently high quality to keep with a view to leveraging it in the future.

Nevertheless, some of these factors present their own interesting learning opportunities. For example, the fact that students take courses in a wide variety of fields taught by different trainers will give them the chance to weigh the merits of storing all their translations in a single large TM database as compared to creating and maintaining different TM databases for different fields or “clients” (i.e. trainers). Meanwhile, a student who stores a translation in a TM database and who then later receives feedback from a trainer can learn about the necessity of integrating those revisions into the TM database so as to not to perpetuate the errors in future translations. This is an important lesson to learn before entering the workforce, as noted by Lanctôt (2001: 30), who provides an account of a translator who carefully stores all his translations in a TM, but who does not update the contents to reflect corrections made by the client to the final document. When the client sends a similar document the following year, the translator uses the TM and blithely reproduces the same errors in the new translation, much to the irritation of the client.

By encouraging the use of free and open-source TMs, trainers can assist students in becoming more familiar and more comfortable with technologies and practices that they are likely to encounter in the workplace. The university environment is a much better place for students to begin to come to grips with new technologies and their associated challenges, rather than waiting until they are immersed in the high-volume, high-stress environment of today’s professional world before beginning to contemplate these issues.

3. The Collection of Electronic Resources in Translation Technologies (CERTT)

The discussions above have highlighted numerous benefits of including various types of TM tools as widely as possible in translation programs. However, such integration requires trainers and students to master at least the essential features of these tools. The investment of time in training users is not negligible, and many professors may need help in preparing training materials for use in their courses, particularly if there is a need for materials for a range of tools for use in different courses and contexts. It was originally in order to meet this need at the University of Ottawa's School of Translation and Interpretation that we developed the Collection of Electronic Resources in Translation Technologies (CERTT).

Given the challenges of providing sufficiently wide and deep experience with translation tools within the restrictions imposed by limited course time, a bank of resources such as CERTT can be an invaluable aid. By centralizing a bank of resources of different types, ranging from tutorials and exercises to sample files to frequently asked questions (FAQs) and glossaries of tool types, we hope to allow users to see the range of possibilities in the field of translation technologies, both commercial and free or low-cost.

First, CERTT includes tutorials, exercises and sample files to assist users in becoming familiar with a range of TM software products — originally commercial and now increasingly free and low-cost — which gives professors latitude in the choice of tools they wish to use. We hope that this will encourage more professors to use TM tools in their translation courses by reducing the workload involved in introducing the tools to students and providing basic technological instruction, and by allowing them to use the tool which best suits them and with which they are most familiar.

Moreover, the availability of tutorials for various tools that are suitable for independent work may encourage students to compare and contrast different kinds of tools. They may thus be able to learn about and use commercial tools in courses, and also expand and adapt what they have learned to free and low-cost tools that they can then use at home. Questions that encourage reflection about tools and their use at specific points in the translation process as well as in a final evaluation section help to direct students' attention towards pertinent aspects of technologies that may assist them in making their own choice of tools according to their needs and preferences.

The collection is organized to make it easy and straightforward to access materials and tools. Tutorials can be accessed by tool name, so that users can go directly to the documents they need to explore a particular tool they wish to use. However, access is also possible by tool type (e.g. TMs), an approach that lets students see the range of tools available for a particular purpose, and encourages them to find out a little about each one, in order to evaluate whether and how it may be useful for them, while working at their own pace and according to their own needs.

Each tutorial begins with an introduction to the tool and the class to which it belongs, and where appropriate (as in the case of most TM systems) an indication of how it fits

into a larger translation environment. The introductions also highlight how the tool can be useful for a translator or other language professional, as well as some of the most salient details about how the tool compares to others in its class (e.g. if it uses an approach or method that differs from others). Finally, tutorials indicate links to additional sources of information about tools, which students can use to find out more (e.g. about the key points developers and distributors identify as strengths or selling points of the tools, related products, additional documentation, current prices, and demo versions available, if any).

The tutorials continue with concrete goals laid out for each section of the tutorial, guiding users through the major functions of the tool. The step-by-step instructions in each section allow students to read detailed descriptions of how to accomplish tasks when they first use a tool, and then later to refer back to specific sections if they need a quick reminder.

The layout of tutorials is also designed to favour independent consultation, breaking the task of using a product down into manageable chunks while still highlighting the links between the various functions of complex tools. Students can thus try the functions of tools that most interest them, or work through a complete (if rather brief and basic) translation process with a sample text.

Finally, the use of consistent terminology and layout for tutorials and exercises is intended to help users quickly become comfortable with the documentation style, so that attention can be focused on the tool and not on the documentation. This similar approach to various tools — including the use of similar or even identical sample files with different tools — is also intended to facilitate comparison of the different products.

Documents are currently written in both English and French, which are the two main working languages of the University of Ottawa's School of Translation and Interpretation. By providing bilingual (and ultimately we hope multilingual) tutorials, CERTT aims to supply students with information in their own language, increasing comfort when learning new tools and facilitating understanding. While CERTT cannot overcome challenges in the lack of interfaces in certain languages for some tools, it can at least provide glossaries and explanations of various commands in English or French, as required, to ensure that users grasp the underlying concepts. By providing bilingual versions of tutorials, CERTT may even give students the opportunity to learn about equivalent terms in the two languages, knowledge that may be useful should they find themselves — as many do — in an environment that requires them to work mainly in their second language. Moreover, as tutorials are not only translated but adapted to the specific needs and challenges of the languages, information that might not be available in monolingual documentation is made available to users working in other languages.

4. Concluding remarks

The increasing prevalence of free and low-cost TM tools on the market shows that a clear demand is being met by such tools, particularly among translators who cannot afford or choose not to use more commercial tools. The need for low-cost options is especially great among translators who are just starting out in the field, and particularly among students. Moreover, in many cases, such tools may be the only alternatives for training programs in which limited budgets prohibit the purchase of commercial packages. We thus believe that these tools should be introduced to trainee translators to help them to become more familiar with the use of TMs in their work and more comfortable with tools in general.

An introduction to free tools may also increase uptake by students in independent work and thus students' continuing exposure to tools in practical translation contexts, increasing both their knowledge about tools and the likelihood that they will be able to identify appropriate contexts for their use in future work and take advantage of these opportunities to make good use of tools' strengths. Nevertheless, since many employers may not adopt these free or low-cost tools, commercial packages should also play an important role in translator training where budgets permit.

However, this multiplicity of tools used in different contexts creates a need for training resources that cover both commercial and free/low-cost products and that are adapted to a variety of training contexts (in-class work, blended learning, independent work, and experimentation). We hope that CERTT's range of resources will help to meet this need.

By making it easier for professors to integrate tools into their courses, or for students to take the initiative and begin to use tools independently, CERTT can offer students the opportunity to learn about TM tools and their role in translation gradually. In doing so, we hope that these students will increase their awareness of and comfort levels with technology and computers throughout their program of study.

Of course, like all technology users, they will likely encounter some technological challenges. However, they will do so in an environment that affords them easy access to targeted technological support (either directly in the CERTT bank's FAQ section, by contacting the CERTT team, or ultimately through the distributor's technological support services). Moreover, we believe that such technical problems are best encountered in the context of homework and/or relatively short texts and generous deadlines that are typical of translation courses, rather than on very large and/or urgent assignments for the clients who both provide the new translator's living and make or break his or her reputation.

Moreover, by encouraging integration of translation training and translation tool use, we hope to provide students with an environment in which regular, focused feedback helps them to avoid the pitfalls of uncritical use of translation tools. All translator trainers are aware of the importance of critical analysis of the role of tools in translation. By allowing students to try and compare a range of tools in a structured environment, and

by asking regular questions about the usefulness and use of these tools as they learn, we hope to stimulate this awareness among students as well in a natural and effective way.

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References

- Ahrenberg, Lars and Magnus Merkel. 1996. On Translation Corpora and Translation Support Tools: A Project Report. In Karin Aijmer, Bengt Altenberg, and Mats Johansson (eds.). *Languages in Contrast*. Lund: Lund University Press, 183-200.
- Arrouart, Catherine. 2003. Les mémoires de traduction et la formation universitaire : quelques pistes de réflexion. *Meta*, 48(3), 476-479.
- Biau Gil, José Ramón. 2006. Teaching Electronic Tools for Translators Online. Anthony Pym, Alexander Perestrenko and Bram Starink (eds.). 2006. *Translation Technology and its Teaching*. Tarragona: Intercultural Studies Group, 89-96.
- Bowker, Lynne. 2003. Teaching translation technology: Towards an integrated approach. *Tradução e Comunicação*, 12, 65-79.
- Bowker, Lynne. 2004. What does it take to be a translator in Canada in the 21st Century? Exploring a database of job advertisements. *Meta*, 49(4), 960-972.
- Broersma, Matthew. 2005. IDC: Quality drives European open source adoption. Techworld.com, April 22, 2005. <<http://www.itworldcanada.com/Pages/Docbase/ViewArticle.aspx?id=idgml-8f87ddb3-bfe0-4b69&s=90323>> [accessed July 23, 2008].
- Canadian Translation Industry Sectoral Committee (CTISC). 1999. *Survey of the Canadian Translation Industry*. <<http://www.uottawa.ca/associations/csict/principle.htm>> [accessed July 14, 2008].
- Champollion, Yves. 2008. Wordfast Compatibility with other Translation Tools: an overview. Wordfast. <http://www.globaltm.net/index.php?whichpage=knowledge&Task=view&questId=38catId=3> [accessed August 18, 2008].
- Collection of Electronic Resources in Translation Technologies (CERTT). <<http://www.certt.ca>> [accessed September 12, 2008].
- Declercq, Christophe. 2006. Tomorrow's Translation Studies Today: Some Considerations. *Translation Ireland*, 17(1), 121-133.
- Dillon, Sarah and Janet Fraser. 2006. Translators and TM: An investigation of translators' perceptions of translation memory adoption. *Machine Translation*, 20(2), 67-79.
- eCoLoTrain. 2006. Translator Training Survey – Results: <<http://www.iti.org.uk/uploadedFiles/surveys/eCoLoTrain-Results%20April%202006%20graphic.pdf>> [accessed July 22, 2008].

- Fulford, Heather. 2001. Translation Tools: An Exploratory Study of Their Adoption by UK Translators. *Machine Translation*, 16(4), 219-232.
- Garcia, Ignacio. 2003. Standard Bearers: Two brand profiles at Lantra-L. *Translation Journal*, 7(4). <<http://accurapid.com/journal/26tm.htm>> [accessed August 1, 2008].
- Gauthier, François. 2006. 2006 Survey on rates and salaries. Transl. James Cookson. Ordre des traducteurs, terminologues et interprètes agréés du Québec. <http://www.ottiaq.org/index_en.php> [accessed July 22, 2008].
- Groethuysen, Cornelia. 2001. Real-life Training for Translators. *Language International*, August 2001, 16-19.
- Hay, Denis. 2007. Working on 'Trados' projects using other CAT tools. Online posting. October 7, 2007. TranslatorsCafé.com. <<http://www.translatorscafe.com/cafe/MegaBBS/threadview.asp?threadid=10180&start=1>> [accessed 8 September 2008].
- Jaatinen, Hannu and Riita Jääskeläinen. 2006. Introducing IT in translator training: Experiences from the COLC project. In Anthony Pym, Alexander Perekrestenko and Bram Starink (eds.). *Translation Technology and its Teaching (with much mention of localization)*. Tarragona: Intercultural Studies Group, Universitat Rovira i Virgili, 83-88. <http://isg.urv.es/library/papers/JaatinenJaaskelainen_IntroducingIT.pdf> [accessed June 20, 2008].
- Kenny, Dorothy. 2007. Translation memories and parallel corpora: Challenges for the translation trainer. In Dorothy Kenny and Kyongjoo Ryou (eds.). *Across Boundaries: International Perspectives on Translation Studies*. Newcastle: Cambridge Scholars Publishing, 192-208.
- Lagoudaki, Elina. 2006. Translation memory systems: Enlightening users' perspective. <<http://www3.imperial.ac.uk/pls/portallive/docs/1/7307707.PDF>> [accessed July 14, 2008].
- Lanctôt, François. 2001. Splendeurs et petites misères... des mémoires de traduction. *Circuit*, 72: 30.
- L'Homme, Marie-Claude. 1999. Apports et limites de l'informatique. In Daniel Gouadec (ed.). *Formation des traducteurs*. Paris: La Maison du Dictionnaire, 109-121.
- Localization Industry Standards Association (LISA). 2007. TBX Specification. <http://www.lisa.org/fileadmin/standards/tbxISO_final.html> [accessed July 22, 2008].
- Localization Industry Standards Association (LISA). 2005. TMX 1.4b Specification. <<http://www.lisa.org/fileadmin/standards/tmx1.4/tmx.htm>> [accessed July 22, 2008].
- Lommel, Arle and Rebecca Ray. 2004. LISA 2004 Translation Memory Survey. <<http://www.lisa.org/Translation-Memory-S.518.0.html>> [accessed July 22, 2008].
- Microsoft Office Online. 2008. Language Interface Pack (LIP) Downloads. <<http://office.microsoft.com/en-us/downloads/HA011133501033.aspx>> [accessed August 18, 2008].
- Microsoft Unlimited Potential. 2008. Local Language Program. <<http://www.microsoft.com/unlimitedpotential/programs/lip.mspx>> [accessed August 19, 2008].
- MultiLingual. Magazine aimed at language professionals. <<http://www.multilingual.com>> [accessed September 13, 2008].

- O'Brien, Sharon and Dorothy Kenny. 2001. In Dublin's Fair City: Teaching Translation Technology at Dublin City University. *Language International*, October 2001, 20-23.
- OpenOffice.org. OpenOffice.org Downloads.
<<http://download.openoffice.org/other.html#en-US>> [accessed August 18, 2008].
- Paul, Ryan. 2005. OSDL Survey Illuminates Perceived Linux Flaws. *ARS Technica*, December 7, 2005. <<http://arstechnica.com/news.ars/post/20051207-5710.html>> [accessed July 23, 2008].
- Paul, Ryan. 2006. Surveys show open source popularity on the rise in industry. *ARS Technica*, January 20, 2006.
<<http://arstechnica.com/news.ars/post/20060120-6017.html>> [accessed July 23, 2008].
- Prior, Marc. 2005. RE: TRADOS-compatible CAT programs.... Online posting. November 8, 2005. TranslatorsCafé.com.
<<http://www.translatorscafe.com/cafe/MegaBBS/thread-view.asp?threadid=5475&start=1>> [accessed August 19, 2008].
- Prior, Marc. 2008. Re: Omega-T Localization. E-mail to C.McBride (received August 18, 2008).
- ProZ. Translation portal with online discussion forum. <<http://www.proz.com>> [accessed September 4, 2008].
- Rogers, Margaret. 2001. Where Do Translators Come From? *Language International*, December 2001, 18-21.
- Rothwell, Andrew and Mark Shuttleworth. 2001. Can Language Technology Co-exist with Traditional Translation Studies? *Language International*, December 2001, 14-17.
- Sherriff, Lucy. 2007. EC Throws Money at OSS Quality Control. *The Register*, January 12, 2007. <http://www.theregister.co.uk/2007/01/12/quality_control/> [accessed August 1, 2008].
- Shih, Chung-ling. 2006. Using Trados's WinAlign Tool to Teach the Translation Equivalence Concept. *Translation Journal*, 10(2).
<<http://accurapid.com/journal/36edu1.htm>> [accessed September 12, 2008].
- Translators' Café. Translation portal with online discussion forum.
<<http://www.translatorscafe.com>> [accessed September 4, 2008].
- Vallianatou, Fotini. 2005. CAT tools and productivity: Tracking words and hours. *Translation Journal*, 9(4). <<http://accurapid.com/journal/34CAT.htm>> [accessed September 12, 2008].
- Yuste, Elia. 2001. Technology-Aided Translation Training. *Hieronymous*, 3/2001
<<http://www.tradulex.org/Hieronymus/Hiero-content.htm>> [accessed July 20, 2008].

Some free and low-cost (*) software of interest to translators

Diatopix: <http://olst.ling.umontreal.ca/~drouinp/diatopix/index_en.html>

Lingotek: <<http://www.lingotek.com>>

MemoQ: <<http://www.kilgray.com/kilgray/companies/memoq>>

Omega-T: <<http://www.Omega-T.org/>>

Similis: <<http://www.lingua-et-machina.com/>>

TermoStat: <http://olst.ling.umontreal.ca/~drouinp/termostat_web/index.php?lang=en_CA>

TextSTAT: <<http://www.niederlandistik.fu-berlin.de/textstat/software-en.html>>

*Wordfast: <<http://www.wordfast.net/>>