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# The use of machine translation in human translation workflows

Practices, perceptions  
and knowledge exchange



**Institute of  
Translation  
and Interpreting**

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**Authors**

Lucas Nunes Vieira  
School of Modern Languages  
University of Bristol  
Email: l.nunesvieira@bristol.ac.uk

Elisa Alonso  
Departamento de Filología y Traducción  
Universidad Pablo de Olavide  
Email: elialonso@upo.es

Collaborating organisations:  
Institute of Translation and Interpreting  
Western Regional Group of the Institute of Translation and Interpreting

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## Executive Summary

This report provides an insight into the use of machine translation (MT) in human written translation settings. The report has two parts. Part I presents findings from interviews conducted with technology specialists, project managers, managing directors and professional translators between March 2016 and October 2017. Thirty interviews lasting nearly twenty hours in total were conducted with participants in eleven countries. The key topics discussed include services and workflows, editing processes, quality, training, assessment and feedback, translation tools, productivity, and costs. The interview findings were presented at an industry-academia knowledge exchange event held at the University of Bristol in January 2018. Part II of the report presents findings from this event. The event was held in a partnership between the University of Bristol, Universidad Pablo de Olavide and the Western Regional Group of the Institute of Translation and Interpreting. It involved freelance translators, project managers, technology specialists, company owners, academics and students. Findings from the interviews and from the knowledge exchange event point to several problematic aspects of MT use in human translation processes. The interviews suggest that some of the key problems in the use of MT in professional settings concern human factors rather than intrinsically technological issues. These factors include difficulties in dealing with multifaceted and project-dependent notions of translation quality, a lack of open lines of communication, and difficulties in managing and matching expectations across teams. Discussions of these topics during the knowledge exchange event at Bristol pointed to a series of other issues, including fuzzy ownership of data, lack of transparency, lack of training, pricing pressures, threats to professionalism and skewed perceptions of the capabilities of technology. Recommendations emerging from the interview findings and from discussions held at the Bristol knowledge exchange event include:

- Avoiding the use of measures based on edit distance as the only parameter used to calculate post-editing rates;
- A need for more research and development initiatives that investigate reliable alternatives to word rates;
- Preventing negative and non-transparent uses of activity tracking (i.e. tracking of translating time and/or keyboarding);
- Improving communication and transparency to ensure that all members of translation supply chains are in synch regarding concepts, expectations and product specifications;
- More training to match editing skills and knowledge of machine translation across professional translation teams;
- A need to educate society and end-clients of what to expect from machine translation technology.

## Introduction

While MT is gaining prominence as a topic of research in translation studies, information that jointly considers various perspectives on this issue (e.g. translators' as well as managing directors') is relatively scarce. This report presents an overview of two initiatives aimed at providing a better understanding of common problems and potential solutions related to the different uses that can be made of MT in human translation processes. The report presents findings from a series of interviews with technology specialists, project managers, managing directors and professional translators conducted between March 2016 and October 2017. The interviews aimed to provide an in-depth international account of the experience of translators and language service providers in their adoption of MT. The report subsequently presents findings from a knowledge exchange event on MT held at the University of Bristol on 24 January 2018. The event involved five presentations and a roundtable discussion. The report's first author and representatives of four translation companies, two in the United Kingdom and two in Spain, gave one presentation each. In addition to the presenters, the roundtable panel included the coordinator of the Western Regional Group of the Institute of Translation and Interpreting and a research engineer from a major translation technology provider. The audience could propose questions to the panel directly or through Slido, an in-conference app used in the event. As well as questions sent by the attendees, the event's page on Slido included a short survey on MT. All attendees were invited to respond to the survey, send questions and vote on any questions that had already been sent. The Slido link was shared online so that those not present could also participate.

Results from the interviews are presented below in Part I of this report. Discussions from the MT event held at Bristol in January 2018 are reported in Part II.

## Part I: Interviews

### Sampling and Demographics

The interviewees were drawn from a series of networks and sampling frames: (1) participants at a congress of the Sociedad Española de Lenguas Modernas in Spain, (2) calls for interviewees posted on ProZ.com, TranslatorsCafé.com and the Translators and Interpreters (ProZ.com) group on Facebook, (3) the membership directory of the Translation Automation User Society (TAUS), and (4) the authors' own networks. Thirty in-depth one-to-one interviews were conducted. Twenty-two of these were conducted via Skype and the other eight were conducted in person. The interviews lasted nearly twenty hours in total. Eleven interviewees were affiliated to TAUS member companies, nine were affiliated to members of the Globalization and Localization Association and one was a member of the Institute of Translation and Interpreting (ITI). In five instances, two individual interviewees

(e.g. manager and in-house translator) were affiliated to the same company. More information about the interviewees is provided below in Figures 1-4.<sup>1</sup>

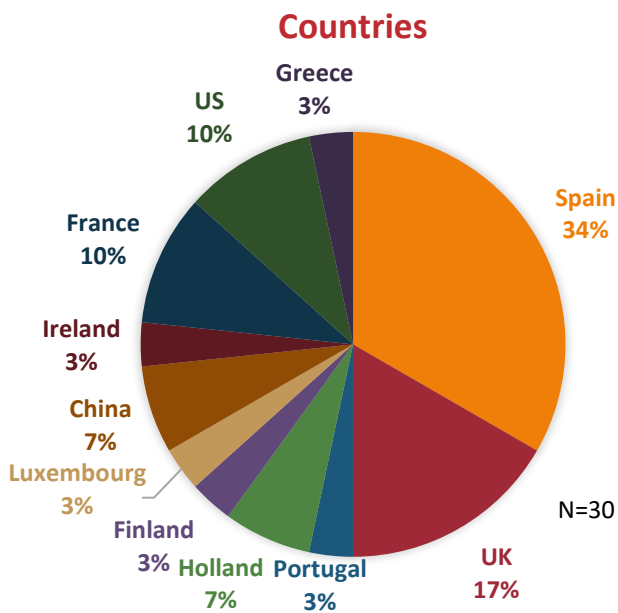


Figure 1 Interviewees' countries

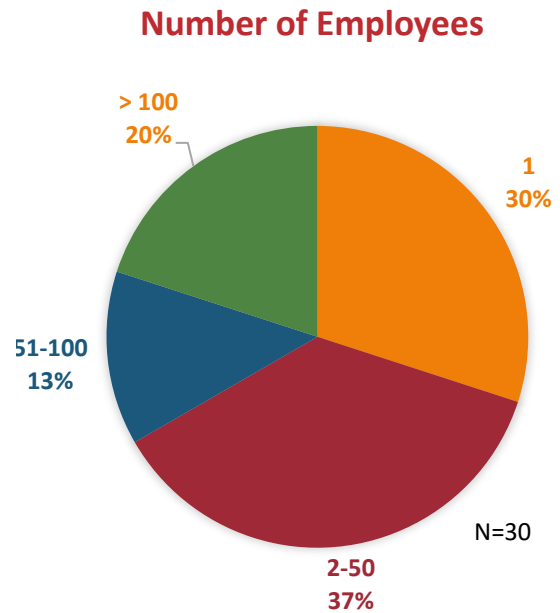


Figure 2 Company size



Figure 3 Interviewees' level of professional experience

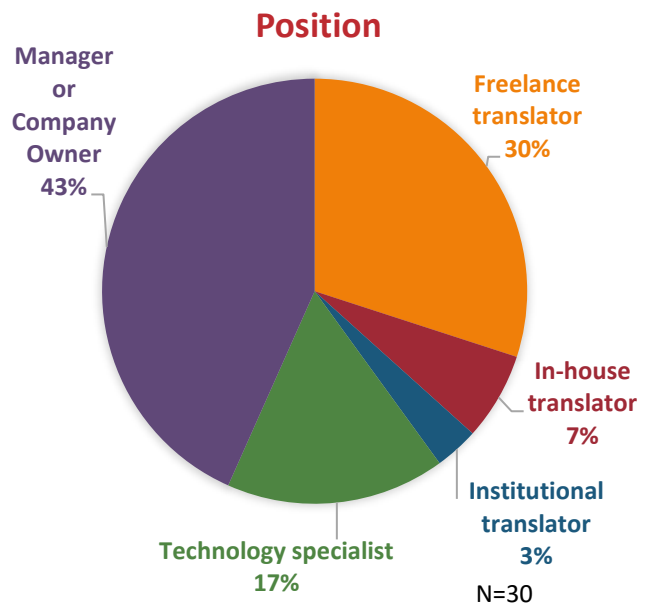


Figure 4 Interviewees' role/position

The sample included companies of different sizes and translators with different levels of experience. European language service providers are represented in the sample in larger

<sup>1</sup> One interviewee did not provide us with information on length of professional experience, so Figure 3 is based on N = 29.

number. According to a previous report by Common Sense Advisory, nine among the top fifteen countries for post-editing production are in Europe,<sup>2</sup> so this aspect of our sample did not seem out of line. According to the same report, small and medium-sized enterprises (SMEs) absorb a substantial part of the global demand for MT post-editing, which is also in line with the present sample, as seen by the proportion of SMEs in Figure 2. A substantial proportion of the interviewees (43%) were managers or company owners in charge of managing other translators. Translating positions, in particular in-house and freelance translators, make up in total a similar proportion (37%) of the sample. Institutional translation, on the other hand, is a small component of the sample (3%) and does not play a prominent role in some of the results reported here. This is due to the drastic differences in context and working conditions observed between government institutions and the private sector. Private-sector businesses and workers make up most of the present sample and are the focus of this report.

### Post-Editing Practices, Services and Workflows

A variety of approaches to the use of MT was noted among the interviewees. The practice of post-editing<sup>3</sup> MT output was at times (1) a separate service in its own right; and at times (2) part of the usual human translation process where MT was used as a tool. In the second case, other than procedures for setting up and evaluating MT, very few differences were reported in terms of workflows and company procedures between post-editing and traditional translation.

In documents such as the TAUS post-editing guidelines<sup>4</sup> and the international standard ISO 18587 'Translation services -- Post-editing of machine translation output – Requirements',<sup>5</sup> two target quality levels are normally referred to: a lower level where translation products including stylistic issues may be deemed 'good enough' and be fit for purpose (where 'light post-editing' is usually suitable); and a higher level where post-edited products need to be indistinguishable from human translation carried out from scratch (where 'full post-editing' is often required). While the distinction between these two categories seems straightforward based on industry documentation, the interviews suggest a much more diverse picture regarding the implementation and differentiation between editing levels. We came across possibilities where:

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<sup>2</sup> [http://cracker-project.eu/wp-content/uploads/Europes\\_Leading\\_Role\\_in\\_MT.pdf](http://cracker-project.eu/wp-content/uploads/Europes_Leading_Role_in_MT.pdf)

<sup>3</sup> Post-editing is understood in this report as the practice of editing interactive, adaptive and/or static MT output in a translation editing environment where translation memory matches and other resources such as term bases may also be used. This may be carried out as part of regular translation services where MT is used as a tool or where MT post-editing is a separate service in its own right.

<sup>4</sup> <https://www.taus.net/academy/best-practices/postedit-best-practices/machine-translation-post-editing-guidelines>

<sup>5</sup> <https://www.iso.org/standard/62970.html>

- post-editing (a single level) is applied to low-stakes content only and is not associated with translation products carrying high-quality requirements;
- translators are required to work to different editing levels depending on the project, as described in the TAUS and ISO documentation mentioned above;
- client requirements are followed on an ad-hoc and project-dependent basis, without the use of fixed terminology for different post-editing levels;
- higher product quality is linked to more editing or proofing rounds, by different translators (i.e. rather than full post-editing carried out by a single translator).

It was reported that the distinction between full and light post-editing was sometimes difficult to grasp:

‘even in the email, when it says “full post-edition” [sic], sometimes I get light post-edition [sic]’ (LSP11<sup>6</sup>)

‘we’ve tried that in the past in that we used to have what we call a light edit or a heavy edit. I think we’ve gone to the stage now where we just have “an edit”, because we found that the light edit was not light enough to be really differentiated from the heavy edit so we’ve gone away from that and we take a machine translation and it is edited’ (LSP12)

### Editing Processes: Over-Editing and Under-Editing

Regarding editing processes, the principle of not editing more than necessary was found to be harder in practice than it is in theory. Over-editing, where translators invest more effort in post-editing tasks than necessary, was often mentioned as an issue:

‘I haven’t met a person who has approached post-editing for the first time without trying to change everything’ (LSP1)

‘I think if you’re a native speaker of the language and you see the source there and the target and you know it doesn’t quite match up, I think there’s a tendency to perhaps overwork’ (LSP4)

‘the loop they get into is that they will want to get everything right and they will see something that is wrong and spend far too much time creating the perfect translation’ (LSP12)

There were exceptions, however, and some did not report over-editing as a problem:

‘I don’t normally change a lot, because my philosophy is “get it right the first time” [i.e. rather than revisiting already-edited work] (FT4)

Particularly among freelance translators, the dangers of under-editing were also stressed:

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<sup>6</sup> KEY: LSP = language service providers where the interviewee represented a company with more than a single employee (includes project managers, technology specialists and managing directors); FT = freelance translator; IH = in-house (i.e. staff, on or off-site) translator.



‘you have always to be very careful, because there are always mistakes. So maybe the first impression is that the sentence is quite good, the output made by the machine is good, but there are always mistakes’ (FT3)

### Negotiating the Concept of Quality

We observed that a frequent bone of contention in the use of MT was the diversity of notions and expectations of translation quality. While this may be true of translation in general, the use of MT output arguably adds more room for variation in clients’ requirements. Variation in the specifications for translation products must be negotiated and understood by all members of the team, and poor communication in this respect often entailed further issues related to a fair compensation of translators’ work and to how economically viable the use of MT was:

‘when we receive output from the customer for post-editing, we have to analyse it very well with our own engines to see if it's viable for us; economically viable’ (LSP7)

‘we've actually stopped working for a client because they didn't want to raise the [rate] percentage and we found that the MT was not good enough to justify’ (LSP10)

The interviews provided evidence of the new possibilities brought about by technology where products that are not stylistically adequate may well be what clients are prepared to pay for. It was apparent that end-clients are increasingly aware of the possibilities of technology and often expect companies and translators to adapt:

‘if they [clients] are somehow educated, and all the big companies are, they know how they want it and they know how much to spend and they know the quality of the output’ (LSP3)

‘there have been a few clients who have asked us for a comparison between straight machine translation, machine translation and post-editing plus human translation’ (LSP4)

There was also evidence that translators can link the quality specifications of translation products to their own character and professionalism:

‘I have some projects that they ask me for basic quality, you know, but it doesn't go with my character’ (FT7)

‘it [working to lower-quality specifications] is inherently dissatisfying. You can't; I mean you may as well go and do another job because there's no point’ (IH2)

‘what I fear is kind of what they're look for now in the majority of translation is not something that's correct; it's not something that seems like it would be written by a native speaker, but something that's just, you know, enough to get by, to understand the message’ (FT9)

Translators’ reluctance to deliver products that were below their own personal standards was an important factor in their resistance to MT use. We regard this as a difficulty in

reconciling traditional notions of diligence and academic excellence with the fact that a translation that is intrinsically less-than-perfect may well be regarded by clients as fit for purpose. Tailoring translation products to the text's real-world context of use is a common aspect of translation training. However, we feel that when the text's context of use tolerates stylistic errors and other textual issues, the notion of fitness-for-purpose risks fostering conflicts which translation as a professional practice has yet to solve.

### Opacity and Communication Issues

It was mentioned that quality was a matter of making sure that all team members were in synch regarding requirements and product specifications. However, interviewees often reported situations where members of the chain, from end-clients to translators, were not fully aware of processes and procedures. When post-editing was not a separate service and MT was simply used as a tool in the translation process, we observed contexts where end-clients were not necessarily aware of the procedures followed within the translation company. It was also reported that in some cases end-clients might mistakenly presume MT use:

'normally translators are rather surreptitious about machine translation and even when they've done everything manually from the first stage onwards [...] you get the unjustified accusation "this reads like a machine translation", when they're not happy with the style. So we avoid that as much as possible' (FT2)

'[MT is] another secret tool for us, a secret weapon' (LSP7)

Lack of information was also mentioned as a problem in the relationship between translators and companies:

'translation companies give you the least information possible. [...] if they like the content they're happy, if they don't they let you know' (FT4)

'when we ask them for their availability, it's usually before the MT is fully set up [...] so they are usually afraid to commit to a big project' (LSP6)

Generally, open communication and awareness of requirements and procedures were regarded as good solutions for meeting and matching expectations regarding the issues mentioned above:

'given the right content and given, especially, the right expectations with all parts involved, you know, the post-editors, the client, us, and our sales people, I think it's a very valuable... [...] I do see the potential for a lot of misunderstanding if that communication is not clear with the client and the post-editors and I still have this ' (LSP6)

'I get the impression that a lot of people don't understand quite how inaccurate it [MT] can be. [...] So I think if people understand its limitations and work within that, it's OK' (LSP4)

‘you have to start understanding the clients' needs, but you also need, internally, PMs to understand what they are going to manage; you need the commercial team to know what they are going to sell; you need the vendors team to know the type of resources they are going to need; you need the localisation team to know the technology they are going to use and implement [...] you need to have the in-house translators to understand what they are going to do. So I think in the end you need everyone, every single one in the chain, to be able to manage MT’ (LSP11)

### Do LSPs Find Productivity Gains Worthwhile?

Regarding the effects of MT on productivity, among LSPs different ‘stages’ of MT implementation were apparent. Those who had ventured into the technology five or six years ago often reported problems where productivity gains were not initially achieved or were not at first as high as expected. However, at the time of the interviews, most of these problems had been overcome and mostly positive experiences were reported:

‘usually translators can do about 2000/2500 words a day. [With MT] We can reach almost 4000 or even higher, 6000, depending on circumstances’ (LSP3)

There was evidence, however, that when post-editing was not offered as a separate service, a systematic evaluation of MT (when used just as a tool in the translation process) was sometimes not possible:

‘it would require a lot of effort to analyse and evaluate all of our engines based on the domain and based on the source texts; it is difficult. We don't have the tools or resources for that’ (LSP13)

### Do Freelance Translators Find Productivity Gains Worthwhile?

Among freelance translators, we observed mixed accounts on productivity:

‘I don't think the time they expect you to spend; it doesn't match with reality’ (FT3)

‘if it's an easy text, a language that I know very well and I don't have, almost, to look at [...] online resources or dictionaries... I can do 1000 words an hour without a problem’ (FT6)

‘10,000 words [...] only takes 2 days with a machine-translated product. So you save time’ (FT4)

### ISO Standards vs the Market's Own Standards

Seeking certification against international standards, in particular the ISO 18587, was often deemed unnecessary. Standards were, however, generally regarded as a useful reference:

‘[The ISO 18587 is] Good for a reference but [...] The ISO 9001 and the ISO 17100 standards are enough for us’ (LSP7)

'ISO – we haven't followed them, because our clients have their own quality demands; their own standards' (LSP8)

Strict metrics and structures for quality assurance (QA) were sometimes also deemed unnecessary:

'we generally work with what our clients ask us. We've been considering adopting a more, let's say, formalised QA structure. But it's a matter of what problem you are trying to fix and since we get very, very little quality complaints, we feel that we're doing well' (LSP10)

### Assessment, Training and Activity Tracking

Regarding translation assessment, the procedures applied to projects involving MT were in general very similar to traditional translation projects, especially where MT was simply used as a tool rather than as part of a separate service. Some interviewees expressed an interest in developing post-editing-specific assessment structures, however.

Regarding training, off-the-shelf post-editing tests and qualifications were often deemed unsatisfactory:

'it was just "read this and we'll give you a memory test at the end to see if you've read it"' (IH2)

However, there was evidence of investment in tailor-made in-company training:

'[after a 3-week training phase] they will have a live video lecture about their mistakes to let them know about their mistakes and how to revise them' (LSP8)

'we have some quite experienced post-editors that we use to conduct training sessions' (LSP12)

There was evidence of the use of activity tracking where translators' keyboarding and/or the time invested in post-editing tasks are automatically recorded for training purposes. This was reported as a potentially successful methodology:

'if we share with them the metrics and they can see the editing distance, the effort and all those graphics, they get involved in the project [...] and they actually improved their hourly rate' (LSP11)

Activity tracking, whether translating time or just the number of edits performed, was also reported as a way of calculating pricing:

'it's quite good, because it [a built-in timer] stops automatically, it becomes idle after two minutes. For example, if somebody phones you and you just need to go out for ten minutes, after two minutes it becomes idle, stops, and then, as soon as you come again, it starts running the time again [...] It's perfect' (FT6)

'we've got our own method for calculating how much that [rate] would be, which we call the reverse analysis' [...] 'our reverse analysis is based on how many changes were made in

the [MT output]; the difference between the MT output and the post edited file; [...] that enables us to apply a rating to the MT segments. A percentage of the full rate, basically' (LSP15)

The use of activity tracking was found to divide opinions, however. It was mentioned that translators often found this intrusive and were wary of 'being watched'. This topic also proved controversial during the knowledge exchange event at Bristol. This is discussed in more detail in Part II.

### Experience and Attitude

In terms of attitudes to MT, there was a general sense that not everyone was ready or willing to embrace the technology. Opinions varied regarding the possible reasons for this. Some seemed to think that it was a matter of age or cases where lack of professional experience may account for more open-mindedness:

'I would say that right now younger people are more prepared to incorporate this in their own personal processes" (LSP2)

'if we recruit graduates [...] they're much more open-minded in terms of doing some post editing' (LSP15)

There was also the view that companies' recruitment procedures reflected profit-driven practices where employers looked for the path of least resistance in ensuring that translators followed the company's business model:

'[companies] are wanting [...] the fresh new millennial graduates who have never known a solid job, who would be quite happy to take that if they're told "this is how it's done these days"' (FT2)

There was also the view that attitude to MT was simply a personal issue that cannot be explained by age or experience alone:

'there are some people who get it and some won't, and it will not be an age or an experience thing' (LSP12)

### Translation Tools and Technological Grievances

In several contexts, interviewees carried out post-editing projects in translation tools hosted in the cloud. Sometimes these tools were provided by the end-client; sometimes the move to the cloud was decided within the translation company.

Cloud tools are a clear industry trend, but this is not without problems:

'they [the client] give us their own software to do post-edition [sic] and this software sometimes slows the project and your speed, the process and the progress of the project' (IH1)

‘for online tools we have had performance issues, connectivity’ (LSP6)

The choice of using certain tools is sometimes strategic:

‘but we actively went out and [...] are partnering with some of them, so if a client decides to buy that service or that product then they will see us as a vendor and they could decide to have us translate in that tool’ (LSP6)

Among the technological grievances cited by the interviewees, having to repeatedly correct the same mistakes in the MT output was often mentioned. We believe this problem is on the way to being permanently solved as the use of adaptive MT (i.e. where MT systems learn from translators’ edits on the fly) becomes more widespread.

Being able to see the parts of the machine-translated text that require editing in the same way as translation memory fuzzy matches are displayed was also mentioned as a desirable feature. Here too we believe that commercial solutions will soon make this a possibility as word-level MT quality estimation (i.e. where it is possible to estimate automatically the level of quality of specific words/phrases in the MT output) becomes more robust and widespread. This technology has recently been investigated in the CASMACAT project, for example.<sup>7</sup>

Another potential issue with translation tools was the lack of built-in grammar and style checkers like those available in Microsoft Word. In some contexts, translators reported exporting the text from their translation tools to carry out these checks in Word. However, in some tools, even when grammar checkers are not available as a built-in feature, these can often be set up by installing plug-ins and external apps. The interviews suggest a certain under-use of plugins in CAT-tool environments, however. This can be addressed by increasing translators’ awareness of some of these features, but we believe there is also room for CAT tool developers to ensure that more robust style and grammar checkers are available by default.

### Word Rates vs Income

We observed quite a range of views regarding the impact of MT on rates and income. Word rates for post-editing were generally lower, but it was sometimes mentioned that this compensated for an increase in volumes when the MT output allowed translators to work faster:

‘in this industry they are thinking of the price per word [...] It is not the price per word, but the money they get in one day’ (LSP7)

Some expressed the view that, depending on MT quality, post-editing was more profitable:

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<sup>7</sup> <http://www.casmacat.eu/uploads/Deliverables/final-public-report.pdf>

‘if the machine translation has done quite a good job and you don't have to make many changes, it can be very profitable’ (FT3)

‘we compare how much money they [post-editors] can earn each hour. The [post-]editors are higher than traditional translators’ (LSP8)

There was also the view that post-editing was simply a different way of translating with little effect on profit margins:

‘we're not making more money or losing money, you know. [...] you realise that you're going faster, “so I'm making a bit more money”, but then customers find out [...] so then it begins again. It's just another way of translating’ (LSP3)

Calculating post-editing pricing was often deemed problematic. Where translators were paid based on estimates of how much content they were expected to post-edit per unit of time, room for conflict was apparent in situations where clients’ or project managers’ time estimates risked not matching the time translators invested in the task:

‘I say “we expect it to take this much time and [...] please stop working when you get to that point and come back to me, so we can negotiate on timings”’ (LSP4)

A focus on more robust pricing methodologies suitable to the use of MT (i.e. where the quality of machine suggestions is variable) is one of this report’s recommendations. This issue was discussed further in the knowledge exchange event at Bristol. More information is provided in Part II.

## Part II: Knowledge Exchange – University of Bristol, 24 Jan 2018

The interview topics summarised above were discussed at a knowledge exchange event at the University of Bristol on 24 January 2018. In addition to a presentation of these results, given by one of the report’s authors, the event included talks by representatives of four translation companies who explained their model of MT adoption: when it was used, the procedures followed, any frequent issues and how these issues were addressed. After the presentations, the presenters joined the coordinator of the Western Regional Group of the ITI and a research engineer from a major translation technology provider to discuss key topics in a roundtable. Forty-one people attended the event. According to those who completed the event’s exit evaluation form, most of the attendees were professional translators, but the event also involved lecturers/teachers, technology specialists, students, and a government policy employee.

### Event Questions

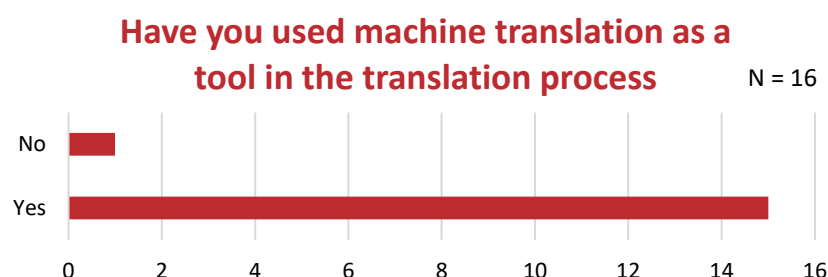
A link to event’s Slido page was shared online prior to the event so that questions could be sent in advance. The attendees were also encouraged to post their questions on Slido throughout the day to be discussed by the roundtable panel.

Some of the questions received are provided below, in order of votes:

- **How can LSPs support freelance translators in adopting and using MT as a tool?**
- **What steps are MT vendors taking to address gender stereotyping in MT systems?**
- **Are there online MT services that do not upload/store the translated text in a DB/memory? (convenience vs. confidentiality)**
- **What incentives could be offered to translators to share their post-editing, entity, Tmemory and other data, to improve MT?**
- **Is investing in one solution now a risky decision considering development has stopped on some platforms, while new ones are popping up all the time?**
- **Which is best: a cloud-based solution or one integrated into my CAT tool?**
- **Do you think translators should engage more with developers? How?**
- **As a translator, would you be more willing to take on a PEMT job if it paid more than a regular translation job using a CAT tool?**
- **What chances does MT have to gain widespread use by LSPs given the need for confidentiality of client data and increasingly common "no MT" clauses in NDAs?**
- **Do agencies that build their own MT databases use previous work by freelancers to populate them? Do/should they ask the freelancers' permission for this?**
- **Will NMT be the nail in the coffin for agencies that don't adapt to technological change?**
- **What experiences have people had so far with Linguee's new DeepL MT?**
- **How can LSPs support freelance translators in adopting and using MT as a tool?**

### Event Survey

As well as being encouraged to send questions, attendees were invited to take part in a short survey set up on Slido. The survey involved two multiple-choice and two open-text questions. In the multiple-choice questions, participants first mentioned if they had used MT in the human translation process and then chose up to three key issues surrounding MT use. In the open-text questions, participants were asked to articulate the reasons why they felt positive or negative about MT. Results from this survey are presented below.

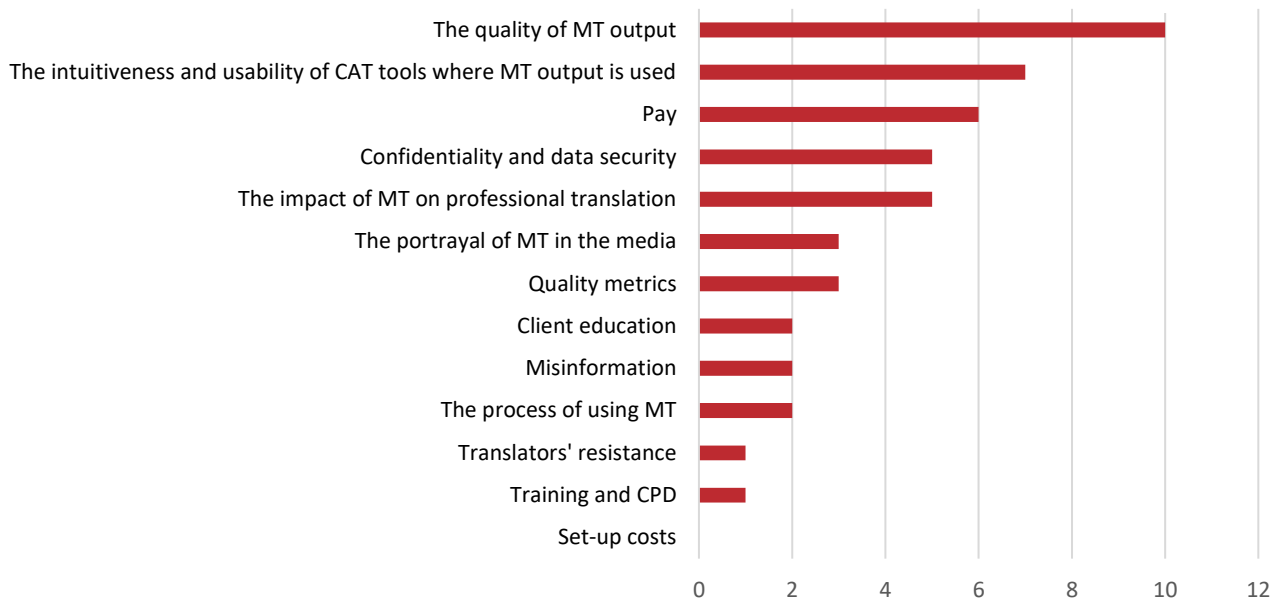


*Figure 5 Question from Slido survey.*



**Please choose up to three topics you deem to be important issues in the use of MT in human translation workflows**

N = 16



*Figure 6 Question from Slido survey.*

Answers to the open-text question on the positive aspects of MT (N = 7) often mentioned MT's potential benefits in increasing translating productivity and making repetitive content easier to handle. MT was seen as a tool which, if not misused, could be very useful. Answers to the open-text question on the negative aspects of MT (N = 9) often mentioned issues with the quality of MT output, but also with the uses that are made of the technology and with society's perception of it. It was mentioned, for example, that MT itself was something positive, but that the overselling of the technology was problematic. Confidentiality issues and MT's potential de-professionalising effects (e.g. where MT-based work is carried out by non-professionals) were also mentioned.

**Key discussion topics**

After the presentations, the results above were shared and used as a framework for the roundtable discussion. It was inevitably difficult to address all questions and topics in the time available, but the discussion touched on several key issues.

**Confidentiality**

As seen in the list of questions provided above, ways in which translation companies could support freelance translators and issues with confidentiality were among the topics that were most mentioned. The audience seemed keen to obtain more information on the potential confidentiality implications of making use of MT as a tool and asked the company representatives present for more information. The general advice from the companies was

to be transparent and contact the company to discuss different possibilities in case translators were considering using MT in projects where this was not an open requirement or expectation. It was also mentioned that more training should be provided and that translators should not refrain from asking questions.

Some translators mentioned that even the default MT systems available in computer-assisted translation tools could lead to productivity gains in translation tasks (i.e. where MT is used as a tool). It was stressed, however, that care should be taken to avoid off-the-shelf freely available systems as these often do not offer confidentiality protection. The following is a summary of some of the key aspects discussed around confidentiality:

- Freely available online MT systems should under no circumstances be used unless this has been expressly authorised by the client.
- Subscribing to paid data packages to use an online system's API, which allows the system to be linked to a CAT tool, may offer some more confidentiality than using free systems. But the use of an API in this way inevitably involves sharing texts with a third party, so this too should under no circumstances be done without the client's knowledge.
- Some MT training toolkits that run locally on the computer without an internet connection may offer confidentiality protection. However, recommended processing power specifications may pose a problem for some translators. In addition, translators would in any case need to check carefully any confidentiality implications of the tool and may wish to discuss the use of MT with the client.
- Some of the companies present mentioned that translators working with them should get in touch with the company in the first instance if they were considering using MT.

### Pricing

It was mentioned that MT can be used to push down rates on agencies and, by extension, on freelance translators. There seemed to have some agreement that word rates are not fit for translation tasks involving MT, but it was also mentioned that developing alternatives to word rates is not trivial. The use of measures based on edit distance as a parameter for a reverse calculation of rates (i.e. where translators are paid according to a post-hoc calculation of how much editing the MT output required) was criticised as misleading. It was mentioned more than once that edits were not necessarily proportional to effort and that edit distance alone should not be used as a pricing parameter as this fails to compensate for time spent thinking of solutions or carrying out research.

### Activity Tracking

Some presenters mentioned potentially positive uses that can be made of activity tracking as a form of training where translators gain better awareness of their own editing process by having access to activity reports (e.g. how much was changed in the MT output and in

how much time). This was a controversial issue, however. For the purpose of training, this was mentioned as a potentially useful methodology, but for the purpose of pricing the use of reports of this kind was regarded as problematic. Even in cases where built-in timers might pause after a given amount of 'idle time', it was felt that this can be inaccurate as a pricing parameter. Given the general controversy around this topic, we feel there is room for further debate on how to ensure a positive and non-exploitative use of activity tracking. Even where 'watching translators' might not be employers' intention, in our view the fact that translators might feel intimidated by this practice warrants further discussion.

#### Post-Editing as a Service and Fears of De-Professionalisation

Fears that MT might have a de-professionalising effect on translation were also voiced. Here it was mentioned that it is important to ensure professional translators' involvement across the spectrum of translation services. It was also mentioned that post-editing as a separate service is not the same as revision and that terminological confusion in this respect can be a factor behind over-editing and unmatched expectations between translators and clients. Terminological imprecision was mentioned as a problem in situations where translators might regard tasks that are part of a post-editing service as any other editing work. As a separate service, post-editing will often come with specific expectations of speed that may make translators' usual way of working inviable. This seems like one of the reasons why post-editing as a service might be carried out by non-professionals in certain contexts, or why translators who are new to the profession are sometimes preferred, as they will not have ingrained habits that might be incompatible with the task. However, according to international standards (e.g the ISO 18587) post-editing services should be carried out by linguists with professional translating or post-editing experience, or who have a recognised degree in translation or related area within language and linguistics. The expectation therefore is that qualified individuals would carry out post-editing, so adaptability and the willingness to adopt different working methods seem like qualities that are in high demand.

#### Data Ownership

Issues with data ownership, as well as if and how translators and companies can be fairly compensated for translations used as MT training data, were also mentioned. The payment of a fee in situations where translators' work is used to improve the client's MT systems was mentioned, but this was deemed hard to implement since establishing ownership of the data is often not straightforward. Suitable mechanisms for tracing and establishing data ownership were regarded as an important future requirement.

#### Neural Machine Translation

As seen in the list of questions above, attendees were also interested in neural machine translation (NMT). This is a new MT technology often reported to be superior to phrase-based machine translation (PBMT), the previous MT paradigm which at the time of writing is still largely used in the industry. In this respect, it was mentioned that results obtained with

NMT development should be approached with caution. It was stressed that while NMT output may sound fluent, some studies have found it to be less accurate than PBMT in certain contexts. Recent mentions of translation in the popular press often build on technological advancement to portray translators as professionals under threat from technology. However, it was mentioned that some of the discourses around MT development risk being overstated and that more education in this respect is required to avoid unrealistically inflating end-clients' expectations.

### Summary of Issues

Generally, it was concluded that many of the problems discussed during the event boiled down to issues of communication and flow of information. It was mentioned that translators, especially those working for a company on a freelance basis, may often 'fall through the cracks' and be ill-informed of expectations and objectives. Some of the company representatives also mentioned that translators should not refrain from asking questions or from voicing their concerns when they disagreed with or disliked something. It seemed to be agreed by most that a crucial aspect of successfully deploying MT is to make sure that all members of the supply chain are fully aware of processes, procedures and expectations.

The list of 'problems' below summarises some of the key topics from the discussion.

- defining quality
- hazy data ownership
- professionals not in control
- professionals falling through the cracks and losing out
- professionals feeling lost
- pressure on pricing; MT being used to push the rates down, on agencies as well as freelancers
- tendency to mass production and worry of de-professionalisation
- situation constantly shifting; need for adaptability high on all sides

### Conclusion

In conclusion, results from the interviews and the discussions held during the knowledge exchange event at Bristol show that the use of MT in the human translation process is far from trouble-free. MT is already widespread in some contexts – be it like a tool in human translation or as part of a separate post-editing service – and its use is expected to rise further. Particularly among LSPs, most problematic experiences concentrated at the initial stages of MT deployment. However, in our view we are not yet at the stage of considering MT a straightforward new feature of human translation workflows. We call for more training and greater awareness of MT uses and capabilities. Especially in contexts involving large teams and many different professionals, translators can often be regarded as mere

contributors who must simply comply with already-established structures and procedures. In our view, it is paramount to avoid this state of affairs. As language specialists, translators should have the freedom to make decisions that are crucial for product success. Particularly in contexts where MT is used, this requires awareness-raising and communication so that expectations are matched and all members of the team work in synch. Many issues discussed in this report concern the human aspects of MT use. Intrinsically technological issues, such as different MT architectures and the usefulness of specific CAT-tool features, were unsurprisingly also mentioned. But even with respect to technological issues, it was found that improvement was often a matter of open communication and robust channels of feedback.

### Recommendations

Below are some of the recommendations that emerged from the interviews presented in Part I of this report and from the discussions held at the Bristol knowledge exchange event, presented in Part II.

- Avoiding the use of measures based on edit distance as the only parameter used to calculate post-editing rates;
- A need for more research and development initiatives that investigate reliable alternatives to word rates;
- Preventing negative and non-transparent uses of activity tracking (i.e. tracking of translating time and/or keyboarding);
- Improving communication and transparency to ensure that all members of translation supply chains are in synch regarding concepts, expectations and product specifications;
- More training to match editing skills and knowledge of machine translation across professional translation teams;
- A need to educate society and end-clients of what to expect from machine translation technology.



University of  
BRISTOL

School of Modern Languages, University of Bristol,  
17 Woodland Road, Bristol BS8 1UP

Telephone: +44 (0)117 928 8610

**[bristol.ac.uk/sml/translation-studies](http://bristol.ac.uk/sml/translation-studies)**