

MTPE in Patents: A Successful Business Story

Valeria Premoli
Aglatech14 S.p.A
vpremoli@aglatech14.it

Elena Murgolo
Aglatech14 S.p.A
emurgolo@aglatech14.it

Diego Cresceri
Creative Words
diego.cresceri@creative-words.com

Abstract

This paper illustrates how we successfully implemented MTPE in our workflow and how the decision of having our own engine turned out to be decisive. After having compared different solutions, we decided to choose an MT provider that could train an engine on our behalf with our material (TMs and glossary in the field of mechanics) to translate patents upon customers' request. After the training, we tested the new engine to evaluate the MT output. Because the quality was so good, we decided to create an in-house team of post-editors, coordinated by one of our senior translators. Due to the increasing request from some of our customers, we needed also some external post-editors to count on, so we contacted an LSP specialized in post-editing and we offered them training in patents post-editing. The challenge for the future is to involve more freelancers and to be able to overcome the resistance that many of them still have towards Machine Translation.

1 Introduction

Up until a few years ago, machine translation (Machine Translation, MT) technology was still at a stage in which its commercial deployment was not possible. In most fields, Rule-based and Statistical MT, up to Hybrid MT, were not precise enough and the post-editing phase was always deemed too time-consuming and resource-intensive to be used in LSPs and companies in

general. This scenario changed completely with the introduction of Neural MT.

Suddenly, language providers around the world found themselves facing a growing request for post-editing services, especially in the areas where light post-editing was a feasible option.

However, in the field of Intellectual Property, customers still tend to request Human Translation, probably worried that MTPE will not meet the required standards in terms of accuracy and precision.

Only relatively recently, about two years ago, we were asked to start post-editing texts in the mechanics field and we were faced with a new challenge, since at the time we had never done MTPE and we didn't know how to proceed.

We committed to find the best way to satisfy our customers' needs and decided to create our own customized engine.

The challenges we had in front of us were the selection of an MT provider that could provide an engine with a good enough output to be implemented without causing production losses; the training of an in-house team, the so-called "Tech Team", to make the most of this new technology; and the training of external resources to face the growing volumes of MTPE requests.

2 Data Collection

Our company is specialized in the translation of patents. The two main areas in which we work are Mechanics and Life Sciences, with many subfields such as Automotive, Biology, Medical devices, Chemistry and so on. Some of our customers started to express an interest in MT and asked us if we were able to offer Post-Editing services in order to reduce costs and above all turnaround times.

© 2019 The authors. This article is licensed under a Creative Commons 4.0 licence, no derivative works, attribution, CCBY-ND.

Therefore, we decided to explore the options offered by the market. Our first choice has been to train our own engine with a popular MT provider. At that time, though, we were completely new to this and we didn't have the required knowledge to do that, also because we didn't have a person that could work full-time on this project. We decided then to opt for a provider that could train an engine on our behalf using the materials we could provide. The mechanics field has been our first choice because the volumes we received from said customers were high and we thought that the training of new resources could be easier in this field than in the Life Sciences one. We collected all the material we had in order to send it to the provider, and then exported all the Translation Memories concerning such field in .tmx format (Automotive, Devices, Mechanics, Electronic Consumer, Electronics, Medical Devices). Due to the amount of TUs provided, we were offered the opportunity to go for a PNMT specialization. Besides the Translation Memories, we also exported our Termbase (which covers different domains) filtering only the mechanics related terms. The engine has been trained within a month and after this period we have been able to deploy it and to start using it in a test phase, called Proof of Concept.

3 PoC

Once the new engine had been trained with the material we provided and with few additional documents, the service provider offered us a two-week testing period (PoC – Proof of Concept). The two main objectives were to test the environmental setup of the CAT tool integrated API, and the quality of the trained engine.

We received a short briefing at the beginning of the test period and were in regular contact with the support team of the service provider. Then, we scheduled a wrap-up call to report our findings, after which the engine was fully deployed for the mechanical and electrotechnical patents that required MT translation and post-editing.

3.1 Connecting the Engine

The plug-in for our CAT tool of choice is structured to combine TMs' results up to a certain fuzzy threshold, which can be set by the user based on the particular requirements of each project, and the automatic translation of all remaining segments, namely those with either no results from the TMs or with fuzzy percentages inferior to such threshold.

The results, be it fuzzy matches or automatic translation, is applied to the file to be translated after a pre-translation to be launched either during the creation of the project or in a second, separate step. The text will then appear in the CAT's editor as a fully translated text with different colour coding to show the origin of each translated segment (fuzzy or AT).

One of the main problems is that, in case of a mismatch between the threshold of look-up match for the TM concordance search and the value for MT translation, the CAT is unable to insert the AT during the pre-translation step. Although the issue was partially solved by matching the two values, the solution was only satisfactory to a limited extent, and it appears to have been solved only in later versions of the plug-in.

3.2 MT Output Evaluation

The crucial issue during the PoC was to establish whether the MT raw output's quality was high enough to constitute a solid base for a substantial increase in productivity.

To this end, two translators with previous patent translation and proofreading experience were appointed to the testing, one full-time, the other on a 4-hours-a-day basis.

A feedback form was provided to monitor the type, frequency, and severity of the mistakes in the output. It was mainly focused on finding out what kind of mistakes were present in the translation and which of these could have a feasible solution to be implemented on our side, or by the service provider.

Severity was scaled from 0 to 3 (0 = Not understandable, 1= hardly understandable, 2= understandable, 3= good).

As it turned out, the quality was very high, with only ten not understandable segments in the course of nine projects (about 48,000 words), and six hardly understandable ones. These fifteen segments received a low score because of grammatical errors of various kind (concordance masculine-feminine, singular-plural, etc.), because of a too literal translation, or because the machine "guessed" words it had never encountered before, creating non-existing, half translated compounds.

We found very few punctuation mistakes, mostly added spaces.

All in all, however, the most troubling issue was, and still is, the fact that single terms are not translated consistently throughout the translation. In the strictly regulated field of patents, where the consistency of the translation is of the foremost importance, also from a legal point of view, the

translation of a single term with different equivalents in the target language leads to a huge waste of time and cognitive resources on the part of the post-editor.

Moreover, since Italian is an inflecting language, the replacement of such wrongly translated words turned out to be very time-consuming.

Unfortunately, this issue still has no satisfactory solution, even though Glossaries offer a partial improvement (however, glossaries seem to work on a ‘search and replace’ basis, namely the engine translates the whole text, automatically choosing the Italian equivalent, and then forces the term from the glossary of choice on the target text, thus creating masculine-feminine concordance mistakes. Also, once a term was inserted in a glossary, the machine was not able to automatically apply the respective singular or plural forms or to decline verbs).

4 Tech Team

To maximise the engine’s profitability, it was decided to create an in-house team of full-time post-editors to process all the PE requests from various clients.

4.1 Recruitment of the Team

The choice of the team in such a project is crucial. As a future-oriented company, we are aware that MT and PE in our industry are not only the future, but already the present. At the same time, we understand that many freelancers are reluctant to try it out and fear that machines will take their place. This is why we have decided to create an in-house team with new people, instead of outsourcing post-editing (at least during this first phase). We decided to look for newly graduated, tech-oriented translators, with the idea that they could have fewer prejudices and less resistance towards Machine Translation. We re-allocated one internal resource, who, together with three other people we hired, formed the so-called “Tech Team”, namely a group of full-time in-house post-editors. Also, one of the in-house translators was appointed as coordinator for the project and had the task of coordinating the post-editing team and manage any possible technical issue that came up, possibly by keeping in contact with the provider’s support service.

4.2 Training

The initial training of our internal team was a practical explanation by the two translators who had tested the engine during the PoC step.

Based on actual projects to be then delivered to clients, the new post-editors were shown both the technical aspects of the CAT tool interface, and the linguistic issues connected with the MT output.

All our in-house PE staff was simultaneously trained in post-editing and in patent translation, creating a very practical learning environment. Instead of generic notions about PE in general, they learned “on the field” how to apply their linguistic and proofreading skills to such a technical field.

After a couple of months of use, we scheduled a training session by an external expert who, based on the results of a few short tests carried out by the in-house post-editors, created a training program for the company’s management and employees.

The test that the in-house post-editors performed was a Human Evaluation Test, focused on fluency and accuracy, scored based on type and frequency of errors. The results showed an outstanding performance by the MT engine.

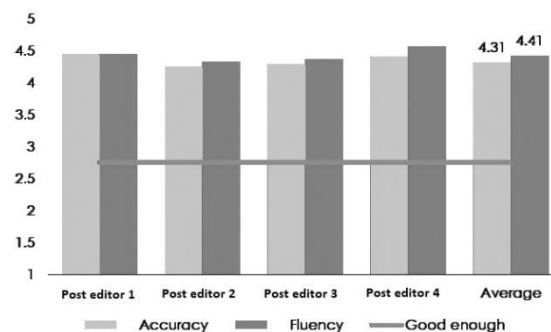


Figure 1. Fluency and Accuracy Performance of the Mechanical Engine.

As we expected, terminology errors were the most frequent, followed by mistranslations and inconsistencies.

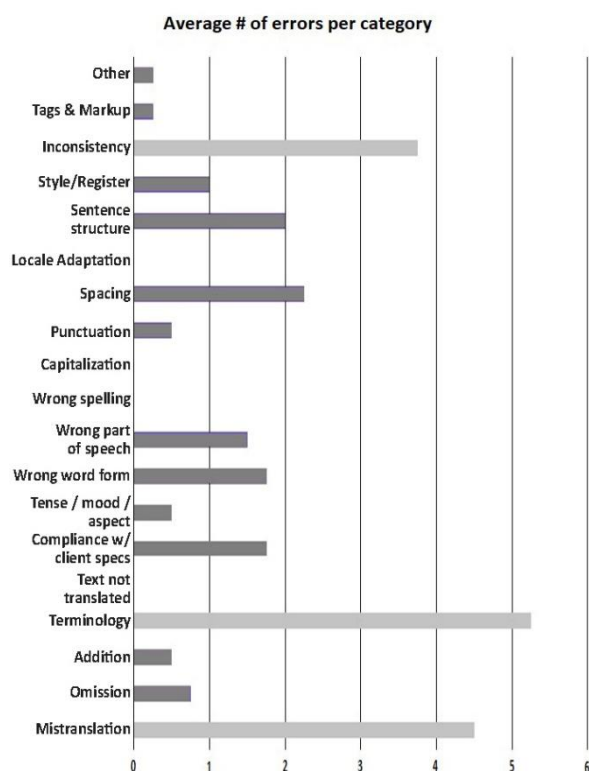


Figure 2. Average # of errors per category.

Training started from a base level, explaining what MT is and how it integrates into the business' workflow, to a practical module containing Post-editing guidelines.

5 External Post-Editors

5.1 Training on Patents

As volumes became higher and the request for PE translations from some customers increased, we decided to look for external post-editors. We already knew an Italian company whose core business is post-editing, so we decided to involve them in our project. It turned out to be a win-win situation: we got the expertise in MTPE and we offered them training in patent translation. Our Recruitment Specialist, who used to be an internal translator and now recruits and qualifies new resources, prepared a training session to explain what a patent is and which are the characteristics of patents in relation to the translation.

The difficult part for them was to learn how to post-edit patents, because you have to maintain consistency in the terminology and you need to remain extremely literal. Nothing should be deleted, all the words of the source text should be translated in the target, paying attention for example to definite and indefinite articles.

We have fully reviewed all the translations received from said other company in order to send

feedback that could help them improve and learn how to post-edit patents.

5.2 External Resources: Partner LSP

A third-party company was contacted that had been providing post-editing services in a variety of verticals since early 2017. Given the specific nature of the first MTPE projects (big volumes, low quality expected), they had created a team of newly graduated linguists, who they then trained remotely on post-editing. Such LSP was approached to provide post-editing services for patents, and they thought it could be a good fit provided that they could be given specific training on patent translation. They selected an initial team of 12 of their best post-editors (based on their willingness to participate, knowledge of technical translation, and availability) and asked them to join for a live training by our Recruitment Specialist. The training consisted of some theoretical information about patents' structure, terminology and style, which are quite peculiar. After the onsite training, a trial period was agreed, in order for the team to get up to speed and fully understand the requirements. Transparency on the post-editors' background, full cooperation on their training and open feedback were paramount in the success of this initiative. After the initial 12 post-editors, more linguists have been successfully added to the team, with training provided remotely.

5.3 External Resources: Freelancers

When the LSP was approached and asked to provide a team of post-editors, they were chosen from an existing database of newly graduated linguists that were then specifically trained on post-editing. When the team was originally formed, different recruiting methods had been used, including direct contact with universities and use of social media (posts and job offers on Facebook proved effective considering the age of the target required). In most cases, the job offer was accepted with no reluctance from the young professionals that had little or no previous on-field experience with translation. However, when respondents had previous (5+ years) experience on the market, they tended to consider post-editing more as a low-level, degrading task and reacted with strong criticism to the job offer, with some extreme occasions where the LSP was even considered fraudulent and scammy.

When we tried to involve our existing freelancers in this process we faced more difficulties. We especially noticed a certain amount of distrust towards the quality of the output and the compensation rates. To ease the passage to PE and to avoid

confusion as much as possible, we still continue paying our freelancers on a word count basis, calculating a discount grid based on CAT analysis. Both fuzzy matches and MT-translated words are calculated as percentages from the full rate. Many “old-style” translators still think that MT is something bad because they don’t know how to use it effectively to transform it into a super-efficient tool. They see it as something that can reduce their income, because MTPE rates are lower, but without considering it a way to boost their productivity. We have seen that the reality in our case is different, and we tried to use the data we collected during the training in order to convince them. When we showed the good output of our engine and the productivity of our in-house post-editors, some of our freelancers were positively surprised and decided at least to try. As we did with the third-party company, we always sent exhaustive feedback after our revision step and, in the end, some of them accepted to work in this way from time to time. We still face some reluctance, but we are working hard to change their minds and demonstrate that MT could be a good choice in some cases.

6 Resources’ Reluctancy

One of the main challenges we face today is to overcome the reluctancy of freelance translators to work with MT. As the number of clients requiring post-editing services increases, and with the growing interest of the industry towards MT, AI, and PE, we felt the need to keep up with the new developments of technology and with the changes that it is bringing about in the translation market. To that end, we believe that our freelancers need to know exactly what post-editing is and how to take advantage of machine translation as a productivity tool, in order to translate faster but with the same quality.

To better understand the mindset of the freelancers we want to involve in post-editing, we recently conducted an anonymous survey, asking 71 professional translators in our database to answer a few short questions about MT and PE.

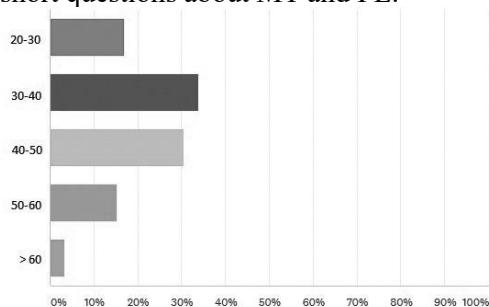


Figure 3. Age range of the respondents.

64,79% of the respondents had already worked in post-editing, while 35,21% of the people involved only had experience with “human” translation so far, mainly because they’ve never been asked to do that (80,77%). Only 4 participants stated they were completely against post-editing. When asked why, they answered that the rates are too low and the output quality too low to be a valid aid in the translation process. A few also claimed that, after many years of experience, they do not believe that the productivity increase would be enough to justify the lower rates, especially since they believe they are still faster at translating in the traditional way.

Less than half of the respondents (43,66%) had never taken part in a training session on post-editing but most of them would be interested in attending in the future (81,25%). This latter figure is of particular interest because it shows that providing training solutions could help overcome the distrust towards MT and PE.

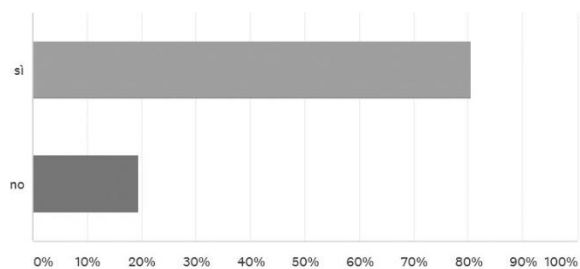


Figure 4. Percentage of translators who would like to attend MTPE training in the future.

Based on these findings we organised two training sessions, one in Milan and one in Bologna. The 44 freelancers who attended the sessions received a specific training encompassing a general introduction on MT and its history, and an in-depth explanation about the different types of post-editing (particularly, full and light post-editing) and the typical errors found in MT pre-translated texts. Afterwards, they took part in a practical session led by our in-house post-editors where they had the chance to put into practice all the information previously received. We then sent a follow-up survey, the results of which showed that most people, that is 25 out of 30 respondents, were very satisfied and willing to start post-editing for us in the near future.

To ease the transition to the new tasks, we felt that reassuring them that they will continue receiving “human” translation jobs would be helpful to help them break the proverbial ice. They were also given a chance to talk with our internal post-editors and to ask them for tips and tricks to tackle any

typical MT error, and to further discuss how to take full advantage of these new tools.

Considering these results and the many opinions gathered talking to freelancers and other professionals working in LSPs, we believe that providing training to demonstrate how useful MT can be and how to get the most out of its integration in the workflow, instead of simply forcing translators to become full-time post-editors, and supporting the transition with feedback after each job is a good way to help them overcome their initial fear and resistance.

7 Conclusion

Post-editing is the future in our industry. In most industry-specific conferences MT is one of the main topics and it is clear that LSPs should be able to meet the requests of the market in order to remain competitive and to be able to satisfy their customers.

Our experience, at the moment, is limited, for various reasons, the most relevant being the fact that our use of MTPE is bound to the request thereof by a customer. Most clients are still reluctant to the use of MT, therefore we focused on the fields in which such requests are more common.

This means that, for now, we can only offer our clients MTPE services in very specific subjects, namely mechanical and chemical patents from English into Italian, at least in case we have to pre-translate the text with our engine.

This being said, the results are still very satisfying: last year we MT-processed about 5.5 million words, 2 million of which were post-edited by external resources (12 translators and 1 reviewer) and the remaining 3.5 million by our 4 in-house post-editors.

Since many of our customers are now asking PE for different fields of application and different language combinations, for example German or French into Italian, we are planning to explore new possibilities, such as new customised engines. It shall also be interesting to consider training our own engine on the premises, in the beginning surely with the support of a specialised service provider, and see how this technology can help us face turnaround times that are becoming tighter and tighter.

The hardest thing to overcome will surely be the reluctance of many translators to get involved in PE projects, so one of our goals is to convince them to try out this working mode and become full-fledged post-editors. The key to this is to have them understand that MT can be a tool that can

help them boost their productivity while maintaining high standards of quality.

This kind of reluctance and suspicion was expressed also by some in-house translators, who were used to “old-style” translation. After attending the same training session as our freelancers and after being shown the actual potential of MT, they post-edited their first texts. When we asked again, they stated that their productivity actually increased thanks to the good output of the engine.

Based on our experience so far, we strongly believe that a key factor to succeed is to present PE not as the substitution of Humans by Machines, the reduction of translators’ usefulness to the confines of accessories to the computer, or the conversion of people themselves to automatons.

At the same time, we are committed to train and involve newly graduates and young translators or post editors who, with their fresh approach to technology, will help shape the “augmented translators” of the future.

MTPE must be understood as a positive and handy new skill that will allow linguists to work at their full-potential and take maximum advantage from this increasingly tech-dominated world.

We believe that, even though the request for patent post-editing is still low when compared to the request for human translation, the future of translation will turn out to be increasingly technological and MT-centred.