

ALPNET AND TSS: THE COMMERCIAL REALITIES OF USING A COMPUTER-AIDED TRANSLATION SYSTEM

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INTRODUCTION

In this paper, I want to share some of what I call the "commercial realities of using MT/CAT". In order to do so, I will define what I mean by "commercial realities." What I wish to present are the issues or factors that allow the use of MT or CAT to deliver a product that meets the customers' expectation of quality, on schedule, at an overall cost savings in terms of time and dollars, while still retaining the goodwill and cooperation of your suppliers or translators.

In this paper, for the sake of brevity, I shall use the term MT in its broadest sense, which includes CAT, under which the ALPNET tools are most correctly classified, in order to avoid having to repeatedly use the term MT/CAT.

In the last four years, ALPNET has learned a great deal about what it takes to successfully use MT in a real, live commercial environment, and I thought it might be interesting to pass some of what we have learned. However, to fully understand some of this, it is necessary to have some background about ALPNET, and the MT systems we use.

ALPNET

The predecessor of ALPNET, a company called Automated Language Processing Systems, was formed in 1980, in Provo, Utah to develop a computer aided translation system from English into four languages. The idea was that a great deal of research in MT had been done at Brigham Young University over the previous ten years, and a group of the researchers felt that based upon what they had learned, in 10 months and with \$200,000 venture capital, they could develop a successful system for translating from English into German, French, Spanish, and Italian.

Given the exploding international trade situation and the need for the translation of materials, the demand for a product like this would undoubtedly mean that the company would be wildly successful and generating profit in its second year of operations. Like those of most other MT or software development companies, the founders were slightly optimistic. The company developed two levels of linguistic software which are collectively called TSS, for Translation Support System. The product known as TransActive is the more linguistically sophisticated of the two products. In the TransActive product, we developed language pairs for English into French, German, Italian, and Spanish, as well as for French into English and German into English.

The technologically less sophisticated product is called AutoTerm. AutoTerm allows the computer to assist the translator in terminology management from one source language into any target language that can be represented by the Roman alphabet. We developed AutoTerm products for English source, French source, German source, as well as products from English into Japanese, English into Chinese, and English into Korean.

In addition to developing these two software products, the company attempted to make the products available on the widest possible variety of computer systems. Because there was no defacto standard hardware platform, we had to attempt to make the software available on every platform that a customer requested. There are TSS systems running on IBM PCs, under XENIX, MS/DOS, and OS/2. TSS also runs on DataGeneral MV series equipment, DEC VAX, Sperry 5000, NCR Tower, CPT, and on IBM mainframes under the VM/CMS systems.

As mentioned before, there are two levels of the TSS product. In addition to terminology management, AutoTerm performs some basic linguistic processing. With AutoTerm, the source text is segmented, the individual words are isolated, base form reduction takes place, the base term is looked up in the dictionary, approved target terms are displayed in a reference window, and there is a user-friendly screen-oriented editor that allows the translator to create a target sentence from the source sentence and terminology information provided by the computer. Also included in AutoTerm is a feature we call repetitions processing that allows for previously translated target segments to be displayed for the translator to select as acceptable target translations.

Finally, AutoTerm also contains a very powerful feature that allows source formatting information to be preserved and retained through the translation process. This allows TSS to minimize costly reformatting of the target document after translation. From a purists perspective, there is very little relation between AutoTerm and real MT. AutoTerm would more accurately be classified as CAT, as it is really assisting the translator and not doing any translation itself.

The TransActive system contains all of the same features of AutoTerm plus some linguistic processing whereby the computer actually creates target segments for the translator to either accept or modify. In an interactive mode, the computer asks the translator questions about the source segment to allow the computer to correctly translate it into the target language. Individual words or phrases are transferred into the target language, words are inflected and some syntactic processing takes place whereby the computer presents the translator with a translation for him to either accept or modify.

Although the company had successful customer installations of TSS after two years, and had software running on several different computer platforms after four years, and had not only English Source systems, but also French Source and German Source after six years, the company was not successful from a profit/loss point of view. After six years of development, the company had developed an impressive array of MT products, but was not making money.

TSS

At the end of 1986, the company reevaluated its position and future direction in this market. We had over 250 copies of the software sold and installed on a wide variety of software and hardware platforms. We had some customers who were using the software very successfully, asking for enhancements, and pushing our developers for new features and new languages. However, we also had many customers who were not satisfied with the product. As we analyzed why these customers were not successful with the product we found there was a divergence between the customers' expectation and what the product could actually deliver. What most customers actually wanted was a black box that could sit in the comer into which you could pour source language text in on the left side and have perfectly formed target

language come out on the right side. The user wanted a solution to his language problem, not a tool that could help him solve the problem. No matter how much time we spent explaining and trying to set proper expectations, once the software was installed users were not willing to put in the resources required to develop and maintain the dictionaries and terminology that the system needed. Users were resistant to the on-going training required by staff turnover, and improvements in the system. Users looked at the system as a finished product and were frustrated by the need for continual revisions and upgrades, the need for support, and the need for software maintenance.

ALPNET knew that the TSS technology worked and could be successfully utilized from the experience and feedback of the successful customers. However, we found ourselves in a position where figuratively speaking we were spending more supporting every system that we sold than we made on the sale of the system itself. The dilemma we faced was that we had spent some \$20 million developing the technology and we had to find a way to capitalize on this investment and maximize the possibility of providing a return to our investors.

The decision that we made was to totally transform our company from a provider of linguistic technology into a provider of translation services. In 1987, Automated Language Processing Systems became ALPNET. We purchased five of the most successful and progressive translation companies in the world and put together a network consisting of 22 offices in 9 countries. We have over 250 full-time employees and over 1500 permanent translators working for us. The new goal of the company is to combine translation technology with experienced professional translators to provide a higher level of service to our customers and a return to our investors. ALPNET became, in effect, our own biggest user of the TSS technology.

We installed the TSS system in most of the ALPNET offices throughout Europe and North America and have utilized it on a wide variety of projects over the last four years. In doing this, we found some very interesting and sometimes surprising results.

The bottom line of all of our findings is that, implemented properly, an MT system can provide superior delivered product to the customer and reduced cost to the provider, thereby generating increased profit to the provider. Conversely, implemented improperly an MT system can dramatically reduce the quality of the delivered product to the customer and increase the time and cost for the provider, thereby reducing the profit of the provider.

Although it certainly does not require four years of effort to come to this conclusion, some of the data behind this conclusion is what was interesting to us and what I would like to share in this paper.

FACTORS FOR SUCCESS

Probably the first thing that surprised ALPNET was that we found very early in the process that most translators don't initially like MT systems. Many of them felt they were being relegated to the task of post-editor and were simply cleaning up the mess the computer created. Many of them felt that the output of the computer was stilted, bland, or uninteresting. Many translators felt that the utilization of the system reduced their creativity and professionalism. Most translators were frustrated by the feeling that they were constantly waiting on the computer and felt they could go faster without it. In fact, our measurements showed that translators were going faster when they used the system, but because there were periods of time where the translators were in fact waiting for the computer to process the next segment, they felt their time was being wasted and they were being slowed down.

Over the years, we have statistically measured that proper use of the system can result in a productivity improvement of up to 400%. That is, that the translator who may normally translate 1,000 words an hour can actually translate up to 5,000 words an hour with the system. These same measurements also showed that we could measure productivity decreases of up to 100%. That is, some translators effectively ceased to translate because of problems, frustrations, and catastrophic system failures.

Another interesting finding was that both translators and project managers were resistant to taking the proper amount of time to set up a project. It should not come as a surprise to anyone reading this that there is a certain amount of up front investment or set-up time to successfully process a translation on an MT system. In the heat of wanting to get a job finished, there is a tendency to want to skip this important step and just start translating.

By the end of the first year of using TSS within ALPNET some definite trends had emerged that allowed us to change some elements of our strategy. We found that ALPNET translators didn't like the TransActive system and didn't achieve the expected productivity improvements when they utilized it. As we have analyzed this we feel some of this was caused by the translators feeling of being relegated to post editor, and because of the very structured output of the TransActive system which the translators felt reduced their creativity. In addition, we feel this was caused because the amount of linguistic processing and interactive questioning taking place was such that dramatic productivity improvements did not occur.

What we did see within ALPNET was that with proper training, set up, and support, translators did like the AutoTerm system and were able to consistently produce acceptable productivity improvements when they utilized it. As we analyzed this we felt that it was because the AutoTerm system provided a methodology whereby we could synergistically combine the experience and skills of the translator with the capabilities of the computer and bring out the best of both.

Over the last three years, utilizing the AutoTerm system within ALPNET, we have developed a theoretical profile of an ideal type of job that lends itself to a commercial success, due to productivity improvement, as well as a satisfied customer and a happy translator. There are some important elements in this profile that are worth noting. As with anything else, these elements are not universal and do not apply equally in every case, however they provide guidelines which we utilize and which we believe would be equally applicable to other MT systems utilized in a commercial environment.

Probably the easiest measurable MT success criteria is the size of the job. Due to the set up time required for almost any MT system, we believe it does not make commercial sense to process a half a page with an MT system. By the time you load the job into the computer, set up a dictionary, and do any required preprocessing, almost any translator could have already had the job done.

The more difficult task is establishing exactly what size threshold makes sense to process the job on MT. Even within our own company there are various answers to this. Some offices feel that anything smaller than 50,000 words is not a candidate while other offices say that 10,000 words or larger can be effectively processed with TSS. A complementary factor is the media on which we receive the job. It can easily be seen that a 10,000 word job received on diskette produced by a compatible word processor would lend itself much more to computer processing than a 10,000 word job received via facsimile or hard copy.

The next major success factor is the subject matter of the job. Technical materials that are straight forward in nature typified by users manuals or reference manuals, lend themselves very well to MT systems. This is because the material is relatively uniform in presentation,

in one subject area, and has a straight-forward style. The dictionary required for this type of translation is much more straight forward than the dictionary required for a translation that covers various subject areas and utilizes a variety of styles and presentations. Also, because dictionaries have already been developed for many technical areas, the upfront dictionary set-up time is minimized for this type of job.

This leads to the next major success factor; the quality of the dictionary available for use during translation. We believe that the time spent up front developing the dictionary is directly proportional to the degree of success that will be achieved on the job. Equally important and in our experience much more difficult to obtain is customer acceptance of the dictionary and terminology utilized. I am sure that it will come as no surprise to any translation provider that when the customer decides to change terminology half way through the project, the overall quality of the result decreases, the amount of time spent on the project increases and the commercial success of the project quickly evaporates.

The next success factor is much more difficult to quantify, and to even talk about. We found over the years that some translators just can't successfully use MT systems. I will not attempt to enter this delicate subject area other than say, there are some cases where you simply can't teach an old dog new tricks.

As you would expect, translators who are more experienced and comfortable with computers and MT systems are more adaptable and therefore more successful in their use. Although much of this comes from training, some of it comes from an intellectual flexibility or willingness to try and make new things work. If a translator is convinced up front that MT won't work, then sure enough it won't. However, if a translator is willing to give MT an honest try, we have found in most cases the project can be a success.

Lest I be considered too hard on translators, it is even more important for the success of the project that translators be given the support they need in order to succeed. The first requirement here is what I call support from the customer. By this I mean the customer must understand that the translator is a human professional with limits on his capability. Even with the use of an MT system, the translator cannot perform miracles and produce quality output from a less than quality source. Also, as previously mentioned, even the best translator using the best MT system will have problems when the customer keeps making changes or the reviewers are inconsistent.

The next support requirement is what I call organizational support. The project must be well organized from the beginning, clearly laid out with goals established, check points monitored, and properly staffed. Once again, even the best translator with the best MT system will fail if the project is not properly organized.

The last support area is what I call technical support. Translators should not be expected to also be computer experts. When the inevitable computer problem occurs, the translator must have readily available technical support to help solve the problem. Whether the problem is hardware, operating system or translation system oriented, we must have a support structure in place to quickly solve the problem and get the translator back translating.

The next success factor is what I call the proper project environment. In addition to being properly organized there must be frequent and convenient communication between the translator and the project manager, other translators, and reviewers on the project. As the inevitable changes and corrections are made, these must be communicated to all translators in order to avoid the time consuming and frustrating repetition and correction of mistakes. Translators need feedback on what is going right as well as what is going wrong with the project.

The logistics of a project are another environmental factor that affects the success of a job. This includes frequent backups of the work being performed, convenient access to either communications or printers for sending partial results, an established methodology for updating the dictionary and repetition files in order to take advantage of corrections being made by other translators or reviewers. These, together with regular feedback from the project manager and customer, all combine to make a successful project.

Project managers must do more than simply organize the project. They must also regularly track and report on the progress of the project. If problems are occurring that are slowing down the project, management needs to be aware of those problems so that corrective action can be taken. It is not just the customer and management that get upset when a project is late. Translators don't like failure any more than the customer does. Increased pressure and long hours spent trying to meet difficult schedules, can decrease the quality of the product just as much as any other factor. Proper tracking and reporting can keep problems from snowballing into major disasters.

Finally, we have found that on large projects it is best that all translators working on one target language be in one location. For the communication, logistics, reporting, and support reasons previously mentioned, one location is a requirement for a project of any size.

Looking back over these factors, many of them are intuitively obvious in hind sight. However, we have found that as we look at any job in terms of these factors, we are not only able to identify if the job is a candidate for MT processing, but we are able to compensate for any less than ideal factors and increase the probability of the commercial success of the job.

I would be less than honest if I didn't indicate that there are alternate views regarding some of the success factors previously listed. There are TSS users outside of ALPNET that use TSS for every job, no matter how large or small, no matter what subject, and these users report tremendous success and that they would not consider using any other means. I believe their success is largely based on their ability to establish the use of TSS as the only acceptable methodology in their environment and not tolerate discussion of anything else.

In addition, there are TSS users outside of ALPNET who only utilize the TransActive system, have great success with it and would not dream of using AutoTerm. These users have been able to develop the sophisticated dictionaries and repetition files that allow them to consistently achieve dramatic productivity improvements on everything they process with TransActive.

Over the last four years, ALPNET has been able to reaffirm and demonstrate that the proper use of TSS has provided certain advantages to both our customers and to the company. Jobs produced with TSS have more consistent use of approved terminology. They are more consistent in both quality and style and lend themselves more to production by multiple translators. This allows a savings in the overall schedule to be achieved while maintaining the consistent quality and style required by the customer. In addition, because of repetition processing, TSS has allowed savings in the retranslation of updates or new releases of the same material. Finally, TSS has allowed schedule and cost savings due to maintaining source document formatting information which reduces DTP time and expense in the target. Depending on the number of languages being translated, the savings provided by this factor alone can outweigh all other factors.

In addition to the factors previously mentioned, we have found some management factors that affect the success of MT projects. The first of which is an understanding between the provider and customer about the capabilities of the MT system being used. When the customer understands what MT can do, and the elements of how it is achieved, the customer

and provider can agree upon some ground rules to minimize anything that would reduce the effectiveness in the MT system. The establishment of these ground rules is essential.

Next is the allocation of an adequate schedule for the project. To stretch an effective analogy, nine translators using the best MT system, still can't make a baby in one month. Proper planning for set up, translation, review, correction, and DTP are essential for the success of the project.

Experienced project administration and coordination require knowledgeable project managers as well as experienced translators. The large multi-language, multi-faceted translation and localisation projects that are becoming more and more prevalent in our industry require experienced, knowledgeable project managers in order for the project to succeed. It is quality project management that is allowing ALPNET, and the other large institutional translation companies, to succeed on these types of projects.

Finally, the translation supplier must work closely with the customer to minimize unnecessary starts and stops on the project, unnecessary terminology changes, and unnecessary revisions of the source material. These three things can kill any project, no matter how well managed.

CONCLUSIONS

Based on all of this, ALPNET believes that the successful commercial implementation and application of MT systems have less to do with the linguistic theory behind the system, and the technical sophistication of the system, than with the experience, skills, professionalism, and attitude of the organization using the system. Whether it is the small translation service who uses AutoTerm for every job they do, the translation department of a major computer manufacturer who uses TransActive for all their work, or ALPNET who utilizes or modifies the tools to meet the needs of the job and the customer, it is the policies, procedures, management, translators, training, and application of the tools that determine success.

ALPNET firmly believes in the synergistic combination of MT and experienced translators. The evidence we have gathered over the last four years convinces us that this combination of resources, whereby the computer is contributing in the areas that it is uniquely suited to, and the translator is contributing in the areas he is uniquely suited to, allows for the maximization of the success of the project in terms of deliverable to the customer and profit to the provider.

ALPNET does not believe that even with the vast improvements in computational ability, programming sophistication and linguistic theory, the foreseeable future holds any promise that MT will ever replace the sophisticated translator. It is the combination of the translator, the machine, and an effectively managed project that allow for commercial success.

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