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## The Business Case for MT: The Breakthrough Is for Real

*Jaap van der Meer, Cross Language N.V.*

*The good news is that machine translation (MT) is definitely ready for "prime time." With payback periods of seven months or less and ROI's in excess of 500%, it is now time for companies to seriously consider the MT option, according to Jaap van der Meer of Cross Language N.V. This article provides a snapshot of solutions for automated multilingual communications on (1) corporate Intranets and (2) Extranets and in (3) translation production environments. ROI calculations for real-life scenarios are also included.*



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*Jaap van der Meer*

### Fifty Years of MT... This Time the Breakthrough Is for Real

Machine Translation (MT) has long been a controversial topic, the source of illusions, jokes and even serious disputes. But nothing has stopped people from believing in its ability to help us cross the language barrier. Research and development in fully automatic translation has been carried out for fifty years. At regular intervals, researchers from Japan, the USA, Russia, Germany, France, the Netherlands and other countries have heralded the big breakthrough.

This time the breakthrough is real. While academics debate linguistic and statistical approaches to MT, organizations in the public and private sectors are putting it to work. Companies like Cisco, Oracle, SAP, Océ, Fortis A.G., DaimlerChrysler, IBM and Ford see tremendous benefits in MT, as well as rapid returns on investment. The breakthrough is market-driven rather than technical: MT is not perfect, but it has become an economic necessity. We must learn how to use it and how to optimize its

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benefits in practical business environments. This article provides a snapshot of solutions for automated multilingual communications on corporate Intranets and Extranets and in translation production environments.

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## **Machine Translation Makes Perfect Business Sense**

### ***The Tide Is Changing***

Growing volumes of information and an ever-faster pace of doing business, at home and across borders, make automatic real-time translation an economic necessity for many corporations. Machine Translation sounds like a curse to some and a fantasy to others. And yet many corporations are realizing tremendous benefits by integrating MT and other language technologies into their localization processes, Intranets and customer support and e-commerce sites. While researchers and translators are often disappointed with the output of MT systems, more and more users are accepting the imperfections and embracing the technology.

Every day, portals like Altavista and Google process nearly ten million requests for automatic translation. Translators, at institutions like the European Commission as well as freelancers, realize that they can produce much more work in a day by post-editing MT instead of translating from scratch. Companies are investing in customized MT systems for their specific domains to allow for real-time, automatic cross-lingual communication with their customers, employees and suppliers.

Language is, quite simply, a business instrument. It helps us to communicate facts and tasks, and where that is the primary goal, MT is often preferable to human translation. Several factors determine the indisputable need for MT, most notably the need to reduce translation costs, shorten translation cycles and improve efficiency. Where the need for translation is instant, or the volumes are high, MT may be the only translation solution available.

## **Intranet Solutions**

### ***Intranets Go Global***

The impact of globalization on the external face of business is well-documented. There has been less focus, however, on the impact internally, particularly on language requirements. Sixty-seven percent of the largest European companies have employees in more than five countries (Robert Rosen, *Global Literacies*, 2000). Even though management may impose English as a “corporate language,” many documents are still written and stored in multiple languages. According to some estimates, the volume of content on corporate Intranets is doubling every six to nine months, with employees spending half their time looking for information, while finding that it continues to get harder (META Group, July 31, 2001).

Every company has a language deficiency factor. This is the

proportion of employees who are not fluent in the corporate language. Language deficiency can seriously undermine the efficiency of office and factory workers. Obviously, the language deficiency factor has a significant negative effect on the retrieval of information on corporate Intranets.

MT can be a powerful tool to compensate for corporate language deficiencies, as shown by the experiences of the following companies:

- Daimler-Chrysler uses MT for translation of company email and Intranet web pages.
- PricewaterhouseCoopers uses MT for translation and sharing of reports and proposals on its Intranet.
- NCR uses MT for e-learning and HR documents.

### ***Intranet Solution: Payback Scenario***

Investment in MT for an Intranet can be earned back very quickly. In a typical scenario, 10% of non-local employees of a medium-sized company may lack fluency in the corporate language(s). They may simply miss information published on the Intranet altogether and “reinvent the wheel,” or they may attempt to compensate by translating on their own, with the probability that they will misinterpret information and make errors.

The value of MT in this scenario is calculated based on the impact of employee strategies to compensate for language deficiencies. In the example below, the total loss of efficiency is estimated at \$2,700,000 and the MT investment at \$450,000. This results in the MT solution being worth approximately \$2,450,000 and generating a ROI of well over 500% within a period of just over two months.

<b>Intranet Payback Scenario - Medium-sized Company</b>		
<b>Corporate Assumptions</b>		
Number of employees		12,000
% of overseas employees		50%
Average labour costs		50,000
<b>Intranet Information Assumptions</b>		
Language deficiency factor		10%
Total loss of efficiency	15%	4,500,000
Employee self-translation factor	5%	1,500,000
Reinvent the wheel factor	7%	2,100,000
Error factor	3%	900,000
Quality scoring rate		60%
<b>Loss of Efficiency</b>		<b>2,700,000</b>
<b>MT Maintenance</b>		<b>250,000</b>
<b>Value</b>		<b>2,450,000</b>
<b>Investment</b>		<b>450,000</b>
<b>Return-on-investment</b>		<b>544%</b>
<b>Payback Period</b>		<b>2.2 month</b>

## **Localization Departments**

## **Localization Under Pressure**

Translation and localization services are under pressure to produce higher volumes in less time at lower costs. Product releases follow at ever-shorter intervals, making time-to-market one of the most crucial factors for success. Online help is replacing traditional user docs, resulting in continuous publishing cycles that cause multilingual content updates to be more challenging than ever.

Different types of content are developed to support international products and services. Marketing literature sells the product, the image and the corporate brand, thus requiring the unique skills of specialized human translators. However, other types of product information are used primarily to communicate user instructions and reference data. Pressure to cut costs and shorten cycle times makes MT an obvious choice for translating the latter types of material.

Many organizations use MT in translation production environments:

- Océ uses MT for translation of all service literature and has realized productivity increases and cost reductions of 65%.
- SAP, Caterpillar and Ford all use MT for technical information.
- Administrators at the European Commission use MT for translation and for writing in secondary languages.

## **Translation Production: Cost-cutting Scenario**

Corporate translation departments can significantly reduce costs by implementing MT in a disciplined and professional way. The scenario below demonstrates cost savings for a translation department that produces eight million words per year at a cost of 15.8 cents per word. An MT system is introduced that processes 80% of the volume. Documented cases show that post-editing can be done two to three times faster than translation; adding 40% costs for post-editing is therefore a conservative estimate. This scenario results in a ROI of 169% and a payback period of seven months.

<b>Translation Production Scenario - In-house Translation Depart.</b>		
<b>Assumptions</b>		
Total volume of words		8,000,000
Pre-MT translation costs	15.8	1,264,000
Translation cost reduction	80%	1,011,200
Add post-editing costs	40%	404,480
Add MT maintenance		100,000
<b>Value</b>		506,720
<b>Investments</b>		300,000
<b>New Competitive Word Rate</b>		9.5 cents
<b>Return-on-investment</b>		169%
<b>Payback Period</b>		7.1 months

These cost benefits should also translate into increased business opportunities and improvements in the ability of in-house departments to provide services. The productivity increase makes the translation department more competitive since rates per word will go down to 9.5 cents. This cost reduction of 40% in turn will attract more business from internal customers.

Translation service companies usually work in multiple industry and product domains for their customers. Unless a service company produces a large volume of work for one specific customer or subject area, or has the full buy-in from the customer, it will be harder for the company to implement a cost-effective MT solution.

## **Extranet Solutions**

### ***Unlock the Extranet for a Multilingual Audience***

In Europe, 83% of the largest companies have customers in more than five countries (Robert Rosen, *Global Literacies*, 2000). Even though business is migrating more and more to the web, a lot of the information on corporate Extranets remains monolingual.

Web-based customer self-service is a very effective way to reduce support costs and improve customer retention. To realize this for a multilingual audience, companies must translate their knowledge bases and online catalogues almost real-time.

Some large corporations have invested in highly customized MT to give worldwide users direct access to their online knowledge bases. Many companies deploy MT to facilitate real-time translation of web sites. For example:

- Cisco uses MT to enable multilingual customer self-service via its online knowledge base.
- Gaumont, the French film distributor, uses MT to offer access to its online catalogue in multiple languages. By doing so, it has unlocked its rich film library for the English-speaking audience.

### ***Extranet Solution: Multilingual Customer Support Scenario***

Investments in MT for e-support and e-commerce lead to a very rapid payback. In the scenario below, a company with \$1 billion in revenue (30% of sales coming from outside its domestic market) invests in MT for customer support. Prior to implementation, the company relies on call centers for most of its interaction with foreign-market customers. Once the content of the company's knowledge base is made available to all customers in their own languages, the volume of foreign language calls into the call centers can be reduced by 150,000 per year. This alone generates a saving of \$4.5 million. In addition, the company increases its overseas revenue by 1% as a result of improved customer service.

The Extranet MT system will undergo extensive customization to ensure adequate quality levels for real-time customer access.

The company also appoints a team of computational linguists to ensure that the performance of the MT system continues to improve. Because of extensive upfront customization, the investment in this solution is estimated at \$900,000. However, the ROI is more than 500% and the payback period just over two months.

<b>Multilingual Extranet - Customer Support Scenario</b>		
<b>Corporate Assumptions</b>		
Company revenues		1,000,000,000
% Of overseas revenues		30%
<b>Extranet Information Assumptions</b>		
Volume of foreign language calls		150,000
Cross-lingual call centre costs	\$30	4,500,000
Call centre savings	50%	2,250,000
Cost of web-based self-service	\$1	75,000
ECommerce revenue increase	1%	3,000,000
Add maintenance costs		400,000
<b>Value</b>		<b>4,775,000</b>
<b>Investments</b>		<b>900,000</b>
<b>Return-on-investment</b>		<b>531%</b>
<b>Payback Period</b>		<b>2.3 months</b>

An increasing number of the company's foreign language users will find their way to the online support site and prefer this web-based self-service to the option of contacting the call center. The number of incoming calls will therefore continue to decrease, thus making the business case for MT in an Extranet environment even more attractive.

## **Implementation Strategies**

As with any technology implementation, the MT solution is only as good as the up-front planning and design phases. Once a company has created a team with key stakeholders who focus on the problem(s) to be solved with MT and who are realistic about how the latter can accomplish this, an MT project can begin. The design and planning phases can then proceed with careful due-diligence of information repositories and current processes.

Implementation of MT production systems and MT Intranet solutions takes from three to six months, depending on the scope of customization and integration. Implementation of MT Extranet solutions takes between six and twelve months, as they require more extensive customization.

Implementation plans are based on analysis and profiling of the text corpora of the selected information repositories. A series of measurements and analyses of text corpora are then applied to determine lexical closure, translatability, readability, domain, etc. These measurements serve as the basis for the customization phase, which includes term extraction, term validation ("type-token"), filtering ("noise" and "do-not-translates"), coding and testing.

This article has outlined various scenarios in which MT works well: MT production systems in translation departments, MT

Intranet solutions and MT Extranet solutions. The good news is that Machine Translation is definitely ready for “prime time.” With payback periods of less than one year and healthy ROI’s, it’s now time for companies to seriously consider the MT option.

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**Jaap van der Meer** is with Cross Language N.V., an independent, dedicated systems integrator for language and translation technologies located in Ghent, Belgium. Cross Language brings together a team of entrepreneurs and consultants with a wealth of experience in the globalization and localization industries. Jaap can be reached at [jaap.vandermeer@crosslang.com](mailto:jaap.vandermeer@crosslang.com).

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