

Users of machine translation system report increased output

Substantial rises in translation output, by as much as 75 per cent in one case, are being reported by users of the Logos machine translation (MT) system after only a few months.

Of the dozen or so Logos installations, I visited four at the company's invitation, the oldest of which was nine months old and the youngest only six weeks. The overall reactions of the users were distinctly positive, — surprisingly so, in fact, given that the first months are abnormally difficult in any computer installation, what with learning and compatibility problems and (in the case of an MT program) the need to input the customer's own vocabulary.

I made a point of asking what customers liked least, and found that they had often had more trouble with hardware or word processing than with actual MT problems.

cost

So far the Logos Corporation is marketing only a German-English MT program, and only in the Federal Republic of Germany and in Switzerland. It is available on the WANG OIS (Office Information System) word processor or VS minicomputer, and it costs 24,000 Deutschmarks to install (about £6,500 or \$10,000). In return customers get a large basic dictionary with over 10,000 dictionary entries, two or three weeks' training for up to three post-editors, 20 days of customer support, software maintenance (including system releases), and three months of free use. From the end of that time they pay according to the amount of MT they use, — and Logos do mean "use". MT output which a customer cannot use is returned to the suppliers and deducted from the customer's account. Usable output costs £200 a month for up to 10,000 words, and is then charged according to throughput, at rates ranging from 60 pfennigs a line (£16 per 1,000 words). The minimum contract period is 12 months.

customer support

The suppliers, then, have to keep on keeping the customer happy, or they will lose the continuing income from their installations. Partly for this reason, Logos say machine translation programs demand a different kind of customer support. For most software firms the program

by
Veronica Lawson

is more important than the application; their customer support staff can stay at the end of a telephone, answering detailed queries about their programs, but not needing to know about a customer's particular application. MT suppliers have to know much more about their customers' needs, Rudolf Thiem, head of Logos customer support, told me. They spend a lot of time out in the field, helping on the spot, particularly when an installation is new. What they are doing, according to Ralph Hawes, executive vice-president of Logos, is after all "building a new industry".

history

Logos' experience of MT is in fact much greater than the relative youth of their German-English program might suggest. Founded in 1969 in the United States, the corporation first developed an English-Vietnamese system. This is reputed to have been very useful, but the markets for both this and their next effort — a Farsi system — were overtaken by history. Luckily nothing comparable has yet happened with German.

The Logos Corporation are careful not to announce their products before they are ready for marketing. They did not start up in Germany until three years ago, and so far they are marketing only the German-English

language pair, though an English-German program has been developed and is installed at Wang in the United States, and some work has also been done on French.

hardware

The program, developed on an IBM 370 mainframe, is designed to be machine-independent and to run on big or small computers, although at present it is available only on the Wang OIS or VS.

The Wang OIS 140 has two screens, a printer and an 80-megabyte hard disk, on which the Logos program occupies 64 megabytes. The program can translate a hundred or more pages a day, enough, according to Ralph Hawes, to keep three post-editors busy. It can translate in background mode, allowing editing or printing to be carried out simultaneously; and it can of course work overnight. The US Army have left it running when they went home and found it still hard at work next morning.

EPENDORF

First and oldest of the Logos installations visited was Eppendorf Gerätebau, who make medical instruments in Hamburg. In the nine months since installing the system to translate service manuals, their output has gone up some 75% or more compared with when they were using human translation.

The translation department, a small one with one translation manager/translator, is fast catching up on its backlog and has had to take on a second translator. And now that word of the MT system has got around the firm, the department is sent work that it never saw before.



Documenting medical instruments at Eppendorf Gerätebau: Martin Payant post-edits Logos translations on Wang.

Five years ago, when Mrs. Brigitte Gregersen joined as translation manager, she was greeted with a backlog so large that manuals were going to foreign customers as much as two years after the instruments began to be exported. Now not only are the foreign language manuals brought out sooner, but the department can also cope with sending out preliminary documentation to help the customer while the manuals are being prepared. They also now issue, for example, a bilingual export bulletin. Many customers will read the English text of this (the post-edited Logos translation); others — such as French speakers — will not, but will find it easier to have English translated than German.

evened out

The fact that they suffer less "Papierkrieg" — are no longer swamped with paper — is only one of the advantages noted by Mrs Gregersen. One of the most appreciated is that the system has evened out the department's work load. Once the source texts have been input, they can be machine-translated in background mode or overnight, then called up to the screen for post-editing when the translators are ready. It is no longer necessary to send work out to freelancers and pay high expedition fees for urgent work.

Another problem with sending work out was that freelancers did not stick to guidelines. Now house style is much easier to enforce.

rapid improvement

Translator/post editor Martin Payant had joined Eppendorf only two months before, but had already seen considerable improvements in quality. Some were due to vocabulary which they had since fed into the system, others to the improved formatting capabilities in the latest system release, received six weeks before.

His life as a newcomer to the subject of medical instruments had been made easier by the fact that most of the vocabulary was already in the system's dictionaries. It was, he stressed, extremely specialised vocabulary. The dictionaries had been set up by a German speaker, however, and so he as an English speaker was inevitably making some changes as well as inputting new terms.

"All the elements of the original are there in the translation", he said. Editing them did not seem to present a problem. He did lack typing skills, but this disadvantage was not insurmountable.

Eppendorf have now input some 4,500 dictionary entries of their own in nine months, and expect eventually to double this. An entry is input on screen, with the system asking various questions about the word. Next to no training is needed. Although the questions are very simple, they evidently elicit a great deal of syntactic and semantic information. Yet a word can be entered in under a minute.

The ease and cost of dictionary updating are vital factors in the economics of an MT system. I did not get a figure for the cost of a Logos dictionary entry, but it seems likely to be less than for Systran (whose particularly powerful dictionaries demand specially trained dictionary coders). On the other hand, Logos entries may be more informative than those for other systems such as ALPS or Weidner.

The entries include subject matter codes. When a user inputs his text for translation, he specifies which of these codes are to be applied. Up to five of the 250 Logos subject codes can be allotted to a text, in order of preference. This makes the MT program more likely to select the right meaning for the context when it comes to look up words.

Experience with Logos *(continued)*

US ARMY

There is still a considerable US Army presence in Germany, housed in a huge number and variety of buildings, some very old. Contracts for building renovation have to be in both English and German. In the Army's Directorate of Engineering and Housing, the contract specifications are written out in German by engineers and then passed to translators/typists, who first type them out in German and then translate them. Logos is now used to draft the translations at two sites, and a number of others may follow.

I visited the translation department in Stuttgart, where Logos was installed six months ago. Although much time has been spent on dictionary build-up — 10,000 terms have been input over the period — translation output is up by at least 20% overall and, according to Logos the time saving on one 65-page job was 140%. Downtime has been due to problems with word processing or with the communications between the Army's Wang OIS and Wang VS, not Logos. Now that dictionary build-up is down to 30% of the initial rate, with sanitary and electrical terms particularly well covered, output should rise further, say by 40% compared with human translation. Editing speeds already range from three to six pages an hour. All of the eight translators in the department work on Logos, although two are not yet fully trained.

"Translators compete to work on the MT," said head translator Rainer Schilling. He likes to have the same translator stay with a job throughout, from the typing of the German original (from a photocopy of a manuscript, often needing correction itself) through vocabulary search and update to post-editing. They are prepared to work at the screen all day if necessary, but can take breaks whenever they wish. Mr. Schilling himself had done 13 hours at the screen one day, but the usual was more like five hours. "Our job description is 'translator/typist'," he says, "and it helps that we are good typists."

Translator Jürgen Schultze-Fabricius evidently enjoys working with MT. "It is more fun than working at a typewriter," he says. "I studied linguistics, and so when Logos makes mistakes I can see why". Logos has cut their typing load: whereas they used to type both the German and the English, they now type little more than the source text, for the amount of typing involved in editing is not large. Also, the system helps to proof-read the source text, by turning up typing errors during the vocabulary search or during post-editing. Word processing is far easier than typing.

Another advantage he mentioned was consistency of terminology. Outside translations from translation companies or industry, according to Rainer Schilling, tended to be unsuitable.

Problems remaining included the splitting of some phrases in parentheses, mixtures of letters and numerals (something familiar to me from Systran) and some occurrences of numerals on their own. A subsection heading such as "2.4.64" tended to be seen as a date and therefore re-ordered American-style "4.2.64".

As at Eppendorf, the amount of hard copy floating about had been much reduced. The Army translators, too, may find themselves being sent a lot of new work, and Mr. Schilling warned that general texts such as correspondence, being more ambiguous, might machine-translate less well. "Black lettering on white reason" was one error that came up on the screen during my visit.

BROWN BOVERI

"A catastrophe" was how Roland Kraus, head of translations at Brown Boveri, Mannheim, described the first Logos demonstration in Germany two or three years ago. But he had followed Logos' progress with interest, and by late 1983 he was finding it quite promising. His installation was now two or three months old, and the overall benefits were already clear. Having the translation on a diskette led to savings on data handling and typesetting; it was no longer necessary to have a typist spend three or four hours re-keyboarding the finished translation.

Quality varied from excellent to unacceptable, but was acceptable overall. Output on data processing texts, for example, was up 50 to 100% compared with human translation, and of course the savings on keyboarding should also be allowed for. Many data processing terms had already been in the dictionary (as the German computer firm Nixdorf was already a customer), but Brown Boveri had still to add their own. During his two weeks' training at Logos in Frankfurt, Mr. Kraus has post-edited a 170-page manual, working from 8 a.m. to 5 p.m. without any strain. Now he was post-editing 20 to 25 a day.



Building translations for the US Army's Directorate of Engineering and Housing in Stuttgart.

Samples of MT output. Top German original (specification for a construction contract). Middle raw MT output; bottom edited MT output

POSITION	BESCHREIBUNG
2.0.0.	<u>Bauarbeiten.</u>
2.1.0.	<u>Abbrucharbeiten.</u>
2.1.1.	Beschädigte Betonplatten vom Podest des Hintereingangs aufnehmen. Podest für die Verlegung der neuen Betonplatten vorbereiten (Geb. Nr. 2500A, B, 2501A, 2502A, B, 2503A, B, 2509B, 2511A, B, 2512A, B, 2513A, B, 2514A, B, 2515A, B, 2517A, B, 2518A, B, 2519A, B). (siehe schematischer Plan). (34 qm)
2.2.0.	<u>Treppenreparaturarbeiten.</u>
2.2.1.	Haupteingangsstufe an allen Gebäuden wie folgt reparieren: 1. Podeststreifenrahmen sorgfältig komplett ausbauen. 2. Beschädigungen, die durch den Ausbau des Podeststreifens entstanden sind, mit kunststoffvergütetem Zementmörtel ausbessern. 3. Risse in der Stufe auskratzen und mit kunststoffvergütetem Zementmörtel ausbessern. 4. Risse zwischen Stufe und Gelände ca. 1 cm bis 5 cm breit auskratzen und mit kunststoffvergütetem Zementmörtel ausbessern. 5. Unter der Haupteingangsstufe sind die Hohlkästen durch die Wassereingießung entstanden. Sie sind mit kunststoffvergütetem Zementmörtel ausbessern. 6. Beschädigungen in Podest sind mit kunststoffvergütetem Zementmörtel ausbessern. 7. Haupteingangsstufe, Größe ca. 80 x 290 cm, komplett, sämtliche Sichtflächen mit Kunststoffbeschichtung, ca. 6 bis 10 mm dick, nach Werkvorschrift beschichten, Fabrikat: 'SILIKAL, SÜDLING-SÜRSCHUTZ GmbH Ronsiek (Aldingen)', (Geb. Nr. 2500-2504A, B, 2509A, B, 2511-2515A, B, 2516A, B, C, 2517-2519A, B, also 31 Stück

POSITION	DESCRIPTION
2.0.0.	<u>Construction work.</u>
2.1.0.	<u>Demolition work.</u>
2.1.1.	Remove damaged concrete slabs of/by the pedestal of the back entrance. Prepare pedestal for the laying of the new concrete slabs (bldg. No. 2500A, B, 2501A, 2502A, B, 2503A, B, 2509B, 2511A, B, 2512A, B, 2513A, B, 2514A, B, 2515A, B, 2517A, B, 2518A, B, 2519A, B). (See schematic plan). (34 CM)
2.2.0.	<u>Stair repair work.</u>
2.2.1.	Main entrance step at all buildings such as follows repair: 1. Carefully completely expand low mat frame. 2. Repair damages which have resulted by developing the door mat with epoxy cement mortar. 3. Scrape rents in the level and repair with epoxy cement mortar. 4. Approximately scrape rents between level and building one CM broadly to 5 CM and repair with epoxy cement mortar. 5. Under the main entrance step, the hollow spaces have resulted by the water erosion. They should be repaired with epoxy cement mortar. 6. Damages in the pedestal should be repaired with epoxy cement mortar. 7. Main entrance step, size 80 x 290 CM, complete, all exposed surfaces with epoxy coating, 6 to 10 MM thick, in accordance with manufacturer's directive. APPROXIMATELY: SILIKAL, SÜDLING-SÜRSCHUTZ (ALDINGEN). (Radg. No. 2500-2504A, B, B, 2516A, B, C, 2517-2519B, B, therefore schematic plan).
2.2.2.	Steps as follows repair to the basement on the backs of building:
2.2.2.A	damaged broken out levels, length 110 CM, percent gradients of 10 CM, with epoxy of following manufacturer's directive (Bldg. 2502A, B, 2503A, B, 2504A, B, 2509A, B, 2512A, B, 2513A, B, 2515B, 2516A, C, 2517)

POSITION	DESCRIPTION
2.0.0.	<u>Construction Work.</u>
2.1.0.	<u>Demolition Work.</u>
2.1.1.	Take up damaged concrete slabs of back entrance landing. Prepare pedestal for laying of new concrete slabs (Buildings No. 2500A, B, 2501A, 2502A, B, 2503A, B, 2509B, 2511A, B, 2512A, B, 2513A, B, 2514A, B, 2515A, B, 2517A, B, 2518A, B, 2519A, B). (see schematic drawing) (34 sqm)
2.2.0.	<u>Stair Repair Work.</u>
2.2.1.	Repair main entrance step at all buildings as follows: 1. Carefully remove complete shoe scraper frames. 2. Repair damages which have resulted from removal of shoe scraper with epoxy cement mortar. 3. Scrape out cracks in step and repair with epoxy cement mortar. 4. Scrape out cracks between step and building approx. 1 cm - 5 cm wide, and repair with epoxy cement mortar. 5. Under main entrance step, hollow spaces have resulted from water erosion. They shall be repaired with epoxy cement mortar. 6. Damage in the landing shall be repaired with epoxy cement mortar. 7. Completely coat all exposed surfaces of main entrance step, size approx. 80 x 290 cm, with epoxy coating, approx. 6 - 10 mm thick, in accordance with manufacturer's directives, make: SILIKAL, SÜDLING-SÜRSCHUTZ GMBH RONSIECK (ALDINGEN). (Building No. 2500-2504A, B, 2509A, B, 2511-2515A, B, 2516A, B, C, 2517-2519A, B, total 31 ea). (see schematic drawing) (Lump sum)
2.2.2.	Repair steps to basement entrance stairways on the backs of buildings as follows:
2.2.2.a	Repair damaged, broken-out steps, length 110 cm, tread 27 cm and riser height 16 cm, with epoxy cement mortar, following manufacturer's directives. (Buildings No. 2500B, 2501B, 2502A, B, 2503A, B, 2504A, B, 2509A, B, 2511A, B, 2512A, B, 2513A, B, 2514A, B, 2515B, 2516A, C, 2517A, 2518B, 2519A, B). (see schematic drawing) (130 ea/steps)



Triumph Adler post-editors Mr Hussein and Mrs Knüspert at their Wang work stations.

TRIUMPH-ADLER

Triumph-Adler had installed Logos in their Central Service Department in Nuremberg six weeks before, again to translate manuals. - Since this was the worst learning period, it was too early for any sensible output figures, but I was interested in the reactions of Mr Hussein and Mrs Knüspert, the two translator/post editors, only a couple of weeks after they had been trained.

Mr. Kraus has a microcomputer at home and had, he says, no fear of the computer ("keine Berührungängste"). Both he and the other two translators using Logos normally type their human translations, and he stressed that a post-editor needs to be good at word processing. If a translator is not familiar with a word processor's editing functions, he thinks, he will find it harder to learn them than to learn to correct the Logos translations. Post-editing, like human translation, takes time to learn.

In some organisations, such as the UN in New York, staff have objected to the introduction of word processors for health reasons. Where the WP terminals have been correctly sited, the objections have so far proved groundless. At Brown Boveri the management and the works council have agreed that full-time typists in the pool should not work at terminals for more than six hours a day. Breaks are carefully laid down: five minutes after the first hour, ten minutes after the next 45 minutes, and then 15 minutes after every 45 minutes.

Post-editing, Mr Kraus believes, will always be needed, except perhaps for some texts used for information scanning. However, he hopes that Logos will continue to improve.

equipment. Nine hundred words had already been added to the dictionaries, including a lot of vocabulary related to printers.

Triumph-Adler had already seen appreciable quality improvements, and despite teething troubles the staff seemed remarkably happy with the new system.

(C) Veronica Lawson 1984

For the past three years Mr Kraus, who incidentally, has among other things written a monograph on the translation of the preposition "bei" into English in technical texts, has been collecting terminology in different areas on the Wang. He has now covered about 25 subjects on Wang floppies, and this makes it much easier to input new vocabulary into the Logos dictionaries.

They had problems with formatting, but most of these had been cured in the last system release. Mrs Knüspert found that Logos now made it much easier for her to handle tables, and generally reduced the amount of repetitive work. She found updating the dictionary interesting and satisfying. Peter Hartkopf of Logos suggested that it was rather like having your own personal dictionary.

Mr Hussein said that he was slightly handicapped by his lack of word processing experience and typing skills, but he evidently enjoyed using the system. The Global Replace facility was much appreciated.

Editing speed varied, they said, but was improving. They still found that it took time to initialise, load and save data.

The manuals translated, typically of 50 to 70 pages, are of variable quality, being written by a score of different people, none of them technical authors as such. In addition to their typewriters, of course, Triumph-Adler produce printers, copiers and many other sorts of office equipment. The Nixdorf vocabulary already in the Logos dictionary had been rather less relevant to Triumph-Adler than expected, Gunter Nelhubel, head of documentation, told me, but this was because Nixdorf concentrated more on software, and certainly less on electro-mechanical