New language lets machines talk to humans

Canada has been assured of an important role and possibly a competitive edge in fifth-generation computers — artificial intelligence (AI) machines — through a hook-up between a Toronto company and researchers in Hungary, reports *The Globe and Mail.*

Logicware Inc. has obtained exclusive North American rights to a new program language called Modular Prolog (Mprolog), developed in Hungary. The Canadian company was formed last December by G and B Automated Equipment Ltd., also of Toronto, to develop and market AI software.

Artificial intelligence is the technique of having a computer emulate human thought processes such as deduction, inference, visual recognition and language comprehension.

The Mprolog program developed by the Institute for Co-ordination of Computer Techniques (Szki) in Budapest will give Logicware an 18- to 24-month lead on US and Japanese companies that are vigorously pursuing AI, according to Logicware chairman R.E. Budai.

Before creating Logicware and signing a contract with Szki late last year, G and B executives spent two years analyzing the market for Mprolog. AI interests G and B because the software can be incorporated into computer automated machinery and is being promoted worldwide as the heart of robotics.

But Logicware's connection with Szki is largely a story of how a Canadian applied research advance in 1968 has been repatriated, in part because Mr. Budai is of Hungarian origin.

Refined version

The Mprolog language is a refined, easier-to-use-version of Prolog — the heart of Japan's national AI project scheduled to reach fruition in 1990. The antecedent of Prolog was developed by Alain Colmerauer in 1968 at the University of Montreal. His project, to develop a computer program to translate French and English, was abandoned before completion and Mr. Colmerauer emigrated to France.

He took his System Q project to the University of Aix-Marseilles and refined the symbolic logic further for academic use. His wife came up with the name Prolog — for "programming in logic" — and further advances in the 1970s were made in Scotland. Prolog then caught the interest of Szki and G and B.

The Szki researchers have modified Prolog to "take it from the scientific to the practical and real world", said Pal Nemeth, deputy director of Szki.

The state-owned research and training institute lacks the resources to market its developments, although it is recognized throughout Europe as one of the world's leaders in software design. Logicware personnel had ties with Szki unmatched by other North American computer giants.

Mr. Budai said it would be a marketing disadvantage if Szki had sought out a giant such as International Business Machines Corp. of Armonk, N.Y., because the software "would be lost on the shelves along with so many other products that come to be identified with its customers".

Logicware has committed "several millions of dollars" to marketing in preparation for a launch in the next two months.

US sales offices

The company will promote the language and its potential, and will divide its efforts into three parts, including strict marketing, education-training aids and research and development enhancements to Mprolog. In preparation, Logicware plans to open two US sales offices and then begin a "road show" across North America.

While current versions of Prolog are useful for highly-advanced applications, Mprolog is geared to laymen who can benefit from a computer application but do not have the capability or resources to program one. A logic program lets the computer handle the details and allows a human and computer to interact in straightforward English.

While it sounds simple, the computer can also solve problems on its own when programmed with Mprolog. With older languages such as Pascal, Basic and Fortran, a computer programmer must know how to answer a problem before asking the computer to do the number crunching or data manipulation. Now, a computer can present several solutions to a single problem, or deduce the best solution.

"Apart from being so much easier to use, computers will now be able to conserve and maintain human knowledge and experience, which will advance the intellectual level of the human race," Mr. Budai said.

One of the first applications Logicware sees for the software is computer-aided learning that will allow machines to solve man's daily problems.

The Toronto Star

Technical director Rainer vonKonigslow (left) *works with Ian MacLachlan using Logicware's artificial intelligence language system.*

Microwaves make juice

Canadian research is developing a better way to make frozen orange juice concentrate by using microwaves.

The traditional method of condensing orange juice to make concentrate uses heating plates to evaporate the water, says Dr. David Pei of the University of Waterloo chemical engineering department. This exposes the juice near the heating surfaces to high heat and risks overheating the juice, which alters the taste, Dr. Pei said.

By heating with microwaves, Dr. Pei finds juice will uniformly absorb heat, avoiding the overheating problem.