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Hungary puts its software on show

by Paul Walton

There is more to Hungarian businessman Thomas Koltai than meets the eye - he is one of the Eastern Bloc's leading computer designers. He claims that Hungary has taken a world lead in building thinking computers.

This unassuming mathematician was in Britain ostensibly to sell the quite ordinary programming skills of Hungarian computer staff, who work for the Softcoop firm which he runs. He calls his business the "export of brain".

But he revealed that until the beginning of last year, he led a team which is designing one of the world's most advanced intelligent knowledge-based systems which will one day think for itself. It is making progress, despite the West's high-technology embargo limiting work to antiquated computers, because of Hungarian skill in the theory as well as the practice of programming.

This work began five years ago at the Hungarian Planning Office. It is generously funded by the socialist administration, which has nonetheless been reluctant in the past to publicise its world lead. Similar work is only just beginning in the West, with the so-called Alvey project funding developments as a collaboration between Government and industry.

The fruits of this work in expert system software and some of the people who wrote it are now about to come to the West for the first time, when a computer trade delegation operates for three days at the Hungarian embassy in November.

Koltai says he led a team of theoretical mathematicians putting cylindrical algebra to work as the first step in building an expert system. This theory allows software to be written in the Prolog computer language, which will speed up the production of the Hungarian Five Year plan by instilling an economist's basic techniques in an expert system.

A large intelligent knowledge base being put together by economists, mathematicians and programmers will reduce the time taken planning the socialist economy from years to months.

The Hungarian project, which is known as the "Metadatabase", is part of a much wider coordinated development effort by the Comecon countries, aimed at applying expert systems to all aspects of daily life. Koltai estimates that the Hungarian expert system will be an interac-



Thomas Koltai

tive "reasoning" system, answering questions immediately by the end of the decade.

Koltai said that he became involved in the early days of theoretical work on expert systems in the 1960s, eventually being assigned to its practical application at the Hungarian Planning Office by the Mathematical Institute of the country's major Academy in 1978. At one time he had also been a professor at the Science University of Budapest.

"The idea was to build up a database which could both hold and use concepts, as well as data. The real problem was in working out the algorithms which would make the interconnection of these concepts possible.

"What we were trying to do was build a computer system which had its own distinct ecology, in this case a system which could be easily used to handle large amounts of data and sophisticated concepts of economists.

Planning cut

"The final aim of the system is that an economist can sit at a terminal and tell the system all his views on whole, or a part of, the economy. The major equations which he wants to use will then be drawn from the database and fed with the appropriate data automatically.

"The expert system could then output three or four models written by each economist each year, rather than the process taking three years to produce just one. A tool such as this could breathe new life into unwieldy planning, which has taken a lot of very laborious work to produce in the past".

The Hungarian Planning Office is now using what might be termed a semi-expert system, where the economist tells a programmer what he is trying to

do and the two of them construct small-scale models. Only a handful of variables can so far be used, to model just one corner of one industry in isolation.

Koltai believes that while this work is limited, it has thrown up some of the tools which will make eventual completion of the larger intelligent knowledge based system much easier.

Hungarian programmers used American theories, which were freely circulating around the expert systems community at the time, to write their own computer language, making it easier to put their own ideas into practise. Koltai said that Modular Prolog is the language put together in Hungary, but now finding its way around the Eastern Bloc.

The Eastern Bloc countries such as the Soviet Union, East Germany, Czechoslovakia and Poland are all doing work on intelligence machines and sensory robots, Koltai said.

This work is hampered only by a lack of skilled staff, something which an expert system could itself improve. A lack of the most up-to-date computer hardware like that used in the West has had little if no effect of advanced, software-based research.

Work at the Hungarian Planning Office surprisingly began on the ICL System/4, for instance, a computer which is more than ten years old. Despite the fact that it was slow and had little capacity, Modular Prolog was developed on it.

Implementation of the expert system for economists has recently been transferred from the System/4 to a version of the more modern Honeywell DPS/8, which a Hungarian firm makes under licence from French supplier Cii-Honeywell Bull.

Koltai pointed out that the West's embargo on the export of high-technology computers behind the Iron Curtain does not stop advanced work being done, or even make it slower - it simply makes Eastern Bloc programmers work that much harder to overcome the constraints of speed, or storage capacity.

He decided to leave the Metadatabase project at the end of 1981, when the Hungarian authorities announced that strict controls on private businesses would be relaxed in moves to warm up the economy.

"As soon as I heard this, I was on the phone to my friends in the computer business to tell them," said Koltai. "We had wanted to run businesses like this for over 20 years. It was an old and dear thought."

The result was that by January last year Koltai set up Softcoop to offer both computer software and staff for export. Along with other Eastern Bloc computer staff, he had worked abroad in West Germany or Switzerland in the past, earning much higher salaries and much needed foreign exchange for the country.

As European countries such as West Germany begin to close their borders to these high-tech migrant workers, many are now turning to Britain.