ON SOME MOMENTS OF COMPUTER SCIENCE EVOLUTION IN ROMANIA

by

Emil Muntean

     In the fifties, a group of researchers from the Institute for Atomics Physics, Bucharest built up the first romanian electronic computer machine, due to an initiative of Acad Gr. Moisil This computer, named "Computer of the Institute for Atomics Physics" (CIFA-1), was designed and implemented under the co-ordination of Eng Victor Toma, in 1954 On that occasion, at the same institute in Bucharest, a new research group aimed to work in the field of computer software programming, is formed

     After a short time, in 1957, at Cluj, is founded the first Romanian Institute, having Acad Tiberiu Popoviciu as supervisor Founded on the 1st of April, 1957 and called the Computer Institute of the Romanian Academy, his activity was based on that of the Numeric Analysis Department of the Cluj branch of the Romanian Academy This institute has been oriented to fields much more related to those considered today as part of Computer Science

     This institute, founded by Acad T Popoviciu in Cluj, represented at that time an exceptional organizatoric achievement There were very few such institutes in the whole world, and in Eastern Europe the research in Cybernetics and Computer Science was neither encouraged nor recognised In Romania, since the foundation of the Institute in Cluj, ten years were necessary for the totalitary goverment to oficially promote the interests in the field of Computer Science and to found, in 1968, in Bucharest, the Research Institute for Electronic Computers (known later as the Computer Technique Institute, I T C)

     The first romanian transistorized computer, DACICC-1 (Automatic Computing Device of the Computer Technique Institute, Cluj), was built at the Computer Institute from Cluj, in 1961 The research groups from the Department for Computer Machines of the same Institute, start the design of some complex applications, both tehnical and economical As a consequence, different industrial companies in Cluj introduced computer technique the shoe factory Clujana, the Railway Company, the Company for freezing equipment The research is oriented towards optimization problems, linear programming, transport problems There were formed some research groups specialized on different fields hardware design, software design, tehnical and scientifical applications, economical applications These structures, founded between 1960 and 1965 at the Computer Technique Institute in Cluj, have tipical Computer Technique and Computer Science interests During the same period, due to the influence generated by the Computer Technique Institute, the Department for Computer Machines is founded at the Faculty of Mathematics This department will have prepared many generations of computer scientists Ten years will pass from the foundation of this department, until it will have a computer for the students activity and for the teachers research in Computer Science

     Less than ten years after the foundation of the Computer Institute in Cluj, the design of a complex project at that time has begun After a lot of complicated efforts to find the nongoverment financial support, in 1967, the design of the DACCIC-2 computer started The DACCIC-2 design project had contained a lot of new elements, introduced at that time as

inovations by the big computer companies, especcialy by 113M through 360 serie

The DACCIC-2 computer had
- word length on 32 bytes,
- memory adress on octets,
- interrupts handling,
- some parallel treatment (statements preparing and
  execution),
- the speed of the central unit was 200,000 operations/sec
- a kernel of the operating system which achieves the peripherals management, the interrupts handling, the programs management in multiprogramming, compiler, assembler, library and loader for FORTRAN programming language,
- a tehnological approach for a serial production

The design this project on an industrial scale hasn't been achieved Under the pressure of the world development and the iniatiatives from the neighbourn countries, the political leading decided to buy a license, to organise a computer production and to concentrate all the research forces in a national institute of a ministerial rank (nonacademical), with branches in Cluj and Timişoara, where a lot of valuable research in Computer Science had been developed This had taken part between 1968 and 1970

After a few years, the results seemed good. a lot of equipment had been introduced in the centralized economy, applications were developed, especially for management, after the principles of the state economy

The licence copyright and the attempt to develope it improved the scientific research, solving some of the major problems in Computer Science

At Cluj, the I T C branch had concentrated the research in the domains as programming languages, databases in peripherals design, personal computers and so on Interesting implementations were designed for the Romanian computers arhitecture, developing the licence, for almost every standardized programming language: FORTRAN, FORTRAN-77, COBOL, PASCAL, C, ADA and CHILL Prototypes were obtained for peripherals, which, later, had known a large serial production displays, plotters, digitizers and personal computers During this period, new research groups were formed, which worked, from a organizatorical point of view, on the same principles as the teams from the computers companies

The concept of "Regional Computer Centre " apeared in Romania, in the seventies, as the principal user of the computers This regional Center co-ordinated the computer science activity in a region, and all of these centres were co-ordinated by the Central Institute for Computer Science (I C I), which, for many years, directed even the necessary of computer equipments of all the companies and enterprises in Romania

After 13 or 15 years, one may clearly realised that Romania could not face the development rate in computers, that the tehnology obtained by licence had grew older very fast and that a new one hadn't appeared The research developed in the eighties, in the domain of computer arhitecture in the whole world and, especcialy, in high tehnology, had the effect that the Romanian products as minicomputers, personal computers and peripherals became unfeasible and uncompetitive

The world tendence in Computer Science was a descentralized one, was in a process

of "democracy". In Romania, the industrial companies could hardly develope their particular applications since the Regional Computer Centre and the Central Institute for Computer generated a tendence of hypercentralization.

That explains the fact that, after 1989, almost everything in Computer Science had to be taken from the beginning, especially concerning the equipment availability, applications design and the training of the operative personnel. Some good experience has been gained during the period of assimilation and development of the licences. But these was an old one. Also, a lot of people gained experience in using the medium computers and minicomputers for management applications, but even this one had the dezavantage of beeing related to a hypercentralized economy, based on laws completly different than those necessary for a market economy.

In a completly new situation, different from that before 1989, the Romanian computer scientists had adjust very quickly, understanding that Romania represents a large computer market. As a consequence, a lot of comercial companies, with state and private fundings, had invested in computer equipment, from private firms. A lot of computer companies had been founded, increasing the quality in software design and computer service.

We hope that in the forthcoming future will bring an explosive increase of computers users, comparative with that in computer equipment. Of course, this fact is seriously affected by the economical restructure and development